CCD-F380E

SERVICE MANUAL

AEP Model
UK Model
E Model
Australian Model

SONY
SONY
Handycam
AF CCD
Video8
8x

Handycam
Video 8

U MECHANISM

For MECHANISM ADJUSTMENTS, refer to the "8 mm Video MECHANICAL ADJUSTMENT MANUAL Ⅲ" (9-972-732-11).

SPECIFICATIONS

System

Video recording system	Rotary two heads, Helical scanning FM system
Audio recording system	Rotary head, FM system
Video signal	PAL colour, CCIR standards
Usable cassette	8 mm video format cassette
Tape speed	SP: Approx. 20.051 mm/sec. LP: Approx. 10.058 mm/sec.
Recording/playback time	SP mode: 1 hour 30 min (P5 – 90) LP mode: 3 hours (P5 – 90)
Fast forward/rewind time	Approx. 6.5 min. (P5 – 90)
Image device	CCD (Charge Coupled Device)
Viewfinder	Electronic viewfinder (black and white)
Lens	Combined 8 × power zoom lens f = 8.5 – 68 mm, F1.6 with macro Filter diameter: 46 mm
Auto focus system	TTL
Colour temperature	AUTO HOLD INDOOR 3,200 K OUTDOOR 5,800 K
Minimum illumination	4 lux
Illumination range	4 lux–100,000 lux (0.4 – 9,294 footcandles)
Recommended illumination	More than 300 lux (28 footcandles)
Aperture correction	Automatic Back light adjustment

– Continued on next page –

MICROFILM

8 VIDEO CAMERA RECORDER

SONY®

Input and output connector

Video output	Phono jack, 1 Vp-p, 75 ohms unbalanced, sync negative
Audio output	Phono jack, –7.5 dBs, at output impedance less than 2.2 kilohms
RFU DC OUT	Special minijack, 5 V DC
Earphone jack	Minijack, 8-ohm impedance
Remote jack	Stereo mini-minijack
MIC jack	Minijack, –66 dBs, low impedance With 2.5–3 V DC output, impedance 6.8 kilohms
Microphone power output jack	Special minijack, 5 V DC

Display in the viewfinder

Mode and caution indicators
Caution: ⊗/⏏/💧/📼/🔋
Mode: REC/STBY/PAUSE/
▶, ◀ (Editsearch)/
⏩/⏪/STILL/PLAY/
▶▶/◀◀/SLOW/❚❚▶
SP/LP mode, FOCUS, ▨,
WHITE BALANCE, ZERO MEM, shutter speed, title colour, title scroll mode, title reverse mode, date, time, tape counter
Recording/battery lamp

General

Power requirements	Battery compartment 6.0 V (battery pack)/7.5 V (AC power adaptor)/9.0 V (alkaline batteries)
Power consumption	6.9 W (camera recording) including the viewfinder
Installation	Vertically, horizontally
Operating temperature	0°C to 40°C (32°F to 104°F)
Storage temperature	–20°C to +60°C (–4°F to +140°F)
Dimensions	Approx. 122 × 153 × 317 mm (w/h/d) ($4^{7}/_{8} \times 6^{1}/_{8} \times 12^{1}/_{2}$ in.) including lens hood
Weight	Approx. 1.2 kg (2 lb 10 oz) excluding the battery and cassette
Microphone	Electret condenser microphone, omni-directional monaural type
Supplied accessories	• Battery pack NP-66H (1) • AC power adaptor AC-V30 (1) • RFU adaptor RFU-89EA/ASA (1) • Aerial selector (1) • Screwdriver (with the RFU-89EA only) (1) • Shoulder strap (1) • Lithium battery CR2025 (1) • Lens cap (1)

Design and specifications are subject to change without notice.

Note
This appliance conforms with EEC Directives 76/889 and 82/499 regarding interference suppression.

SAFETY CHECK-OUT

After correcting the original service problem, perform the following safety checks before releasing the set to the customer:

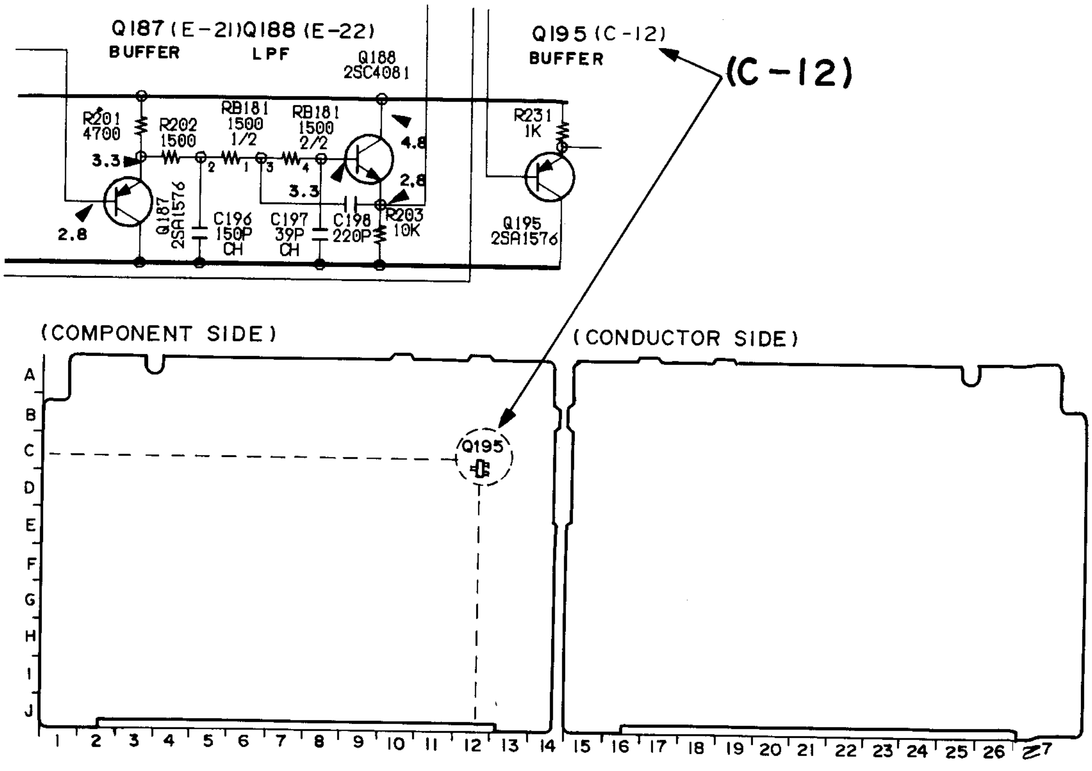
1. Check the area of your repair for unsoldered or poorly-soldered connections. Check the entire board surface for solder splashes and bridges.
2. Check the interboard wiring to ensure that no wires are "pinched" or contact high-wattage resistors.
3. Look for unauthorized replacement parts, particularly transistors, that were installed during a previous repair. Point them out to the customer and recommend their replacement.
4. Look for parts which, though functioning, show obvious signs of deterioration. Point them out to the customer and recommend their replacement.
5. Check the B+ voltage to see it is at the values specified.

SAFETY-RELATED COMPONENT WARNING!!

COMPONENTS IDENTIFIED BY MARK ⚠ OR DOTTED LINE WITH MARK ⚠ ON THE SCHEMATIC DIAGRAMS AND IN THE PARTS LIST ARE CRITICAL TO SAFE OPERATION. REPLACE THESE COMPONENTS WITH SONY PARTS WHOSE PART NUMBERS APPEAR AS SHOWN IN THIS MANUAL OR IN SUPPLEMENTS PUBLISHED BY SONY.

[SEMICONDUCTOR LOCATION]

In this service manual, the mounted locations of the semiconductors (IC, transistors, diodes) are indicated in red sa shown below. This enable to find the location on the board easily when servicing.


Q187 (E-21) Q188 (E-22)
BUFFER
LPF
Q188
2SC4081
R201
4700
R202
1500
RB181
1500
1/2
RB181
1500
2/2
3.3
2.8
4.8
2.8
3.3
Q187
2SA1576
C196
150P
CH
C197
39P
CH
C198
220P
R203
10K
Q195 (C-12)
BUFFER
R231
1K
Q195
2SA1576
(C-12)
(COMPONENT SIDE)
(CONDUCTOR SIDE)
Q195
A
B
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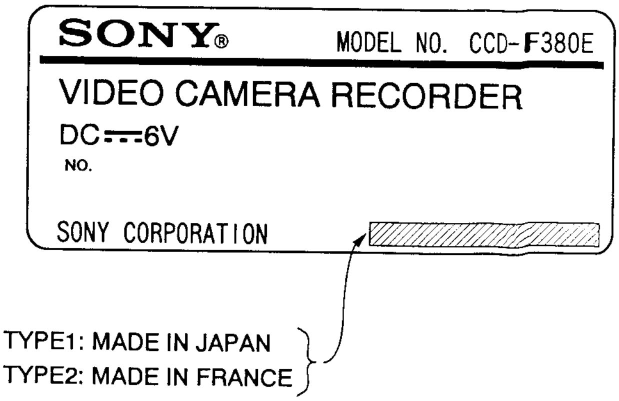
CAUTION

1. In this unit, A or B type EVF is used.

Type A	Color of connecting harness (VF-21) which connectes EVF and CV-8 board is gray. (VF-14P board)
Type B	Color of connecting harness (VF-21) is white. (VF-22P board)

2. There are differences between the electrical and mechanical parts of the TYPE 1 and TYPE 2 of AEP model.
Refer to the following Model number label for identifying.



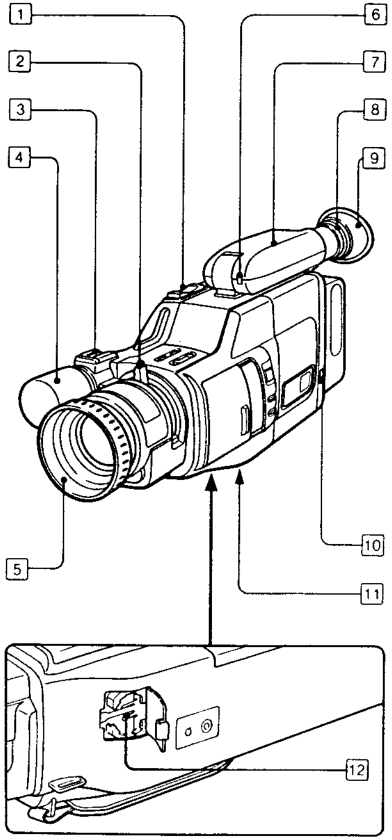
SONY® MODEL NO. CCD-F380E
VIDEO CAMERA RECORDER
DC ⎓ 6V
NO.
SONY CORPORATION

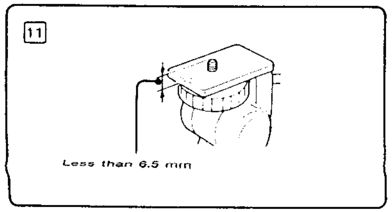
TYPE1: MADE IN JAPAN
TYPE2: MADE IN FRANCE

SECTION 1
GENERAL

This section is extracted from instruction manual of AEP, UK models.

A-1





Location and Function of Parts and Controls

For details on the use of each control, refer to the pages indicated in the circle.

A-1

1 **Power zoom button**

2 **Zoom lever and macro button**

3 **Accessory shoe**
Attach an external microphone, video light, etc.

4 **Built-in microphone (monaural)**

5 **Lens hood**
Also functions as focus ring.

6 **Camera recording/battery lamp**
Lights during camera recording. It blinks when the battery is exhausted.

7 **Viewfinder** ⑱
The picture being recorded or played back can be monitored in monochrome here. Also, data such as caution indicators and function mode are displayed on the viewfinder screen.

8 **Viewfinder lens adjustment ring**
Adjust to your eyesight to assure good focus. Be sure to adjust this ring when shooting for the first time.

9 **Eyecup**

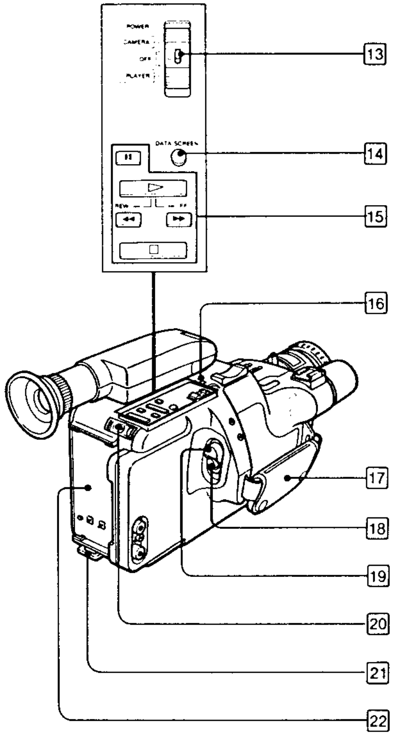
10 **BATT (battery eject) knob** ⑨

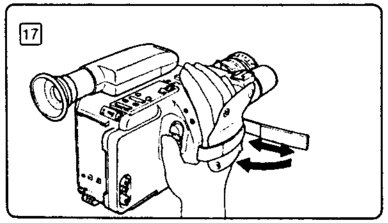
11 **Tripod receptacle (bottom)**

12 **Lithium battery compartment** ⑫

Note when attaching a tripod not manufactured by Sony
When attaching a tripod not manufactured by Sony, the length of the camera mounting screw must be less than 6.5 mm.
Otherwise the screw may damage the inner parts of the camera.

A-2





Location and Function of Parts and Controls

A-2

13 **POWER switch**
CAMERA: For camera recording
PLAYER: For playing back or editing tapes
OFF: Power off

14 **DATA SCREEN button**
Press to display the indication on the viewfinder screen on the TV.

15 **Tape transport buttons**
▷ (playback)
►► FF (fast forward)
◄◄ REW (rewind)
□ (stop)
❚❚ (pause)

16 **REC MODE (recording mode)/EDIT switch** ⑯
Switch it depending on the operating mode.

Mode	Recording	Playback	Editing
Setting	REC MODE SP LP	EDIT (off)	EDIT (on)
Function	Recording mode switch	EDIT switch	

17 **Grip strap**
Adjust the length so that your thumb can easily manipulate the START/STOP button.

18 **START/STOP button**
Press to start and stop camera recording.

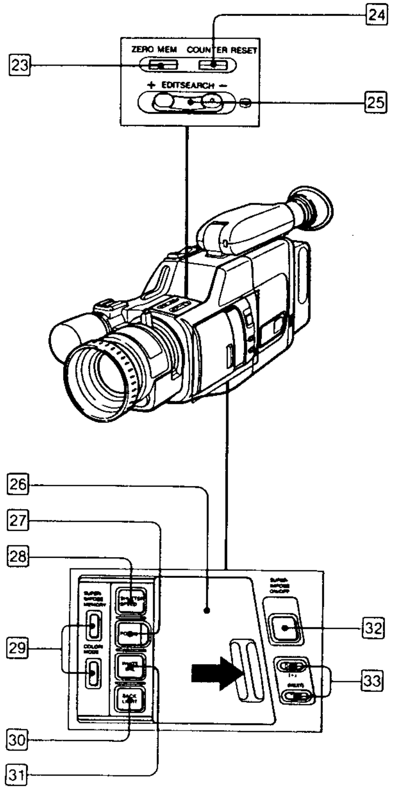
19 **STANDBY switch**
Slide up to STANDBY to set the unit to recording pause mode.

20 **EJECT (cassette eject) button**

21 **Hook for shoulder strap**
Attach a shoulder strap.

22 **Battery mounting surface**

A-3



Location and Function of Parts and Controls

A-3

23 ZERO MEM (zero memory) button
Used to memorize the counter zero point.

24 COUNTER RESET button
Press to reset the counter to zero.

25 EDITSEARCH (and recording review) button ⑲

26 AUTO LOCK cover ⑮
Keep this cover closed when adjusting the focus, white balance, or shutter speed automatically. To adjust these manually, slide open this cover so that the buttons inside can be seen.

27 FOCUS button ㉑
Used for manual focusing.

28 SHUTTER SPEED button ㉕
Used to select the shutter speed.

29 SUPERIMPOSE buttons ㉜
Used to record the title.
MEMORY button
COLOR/MODE button

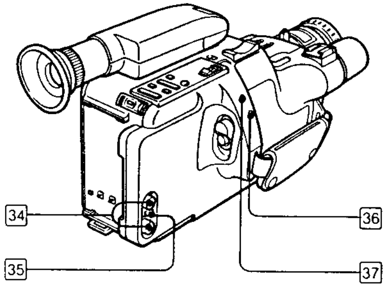
30 BACK LIGHT button ㉔

31 WHITE BAL (white balance) button ㉓
Used for manual white balance adjustment.

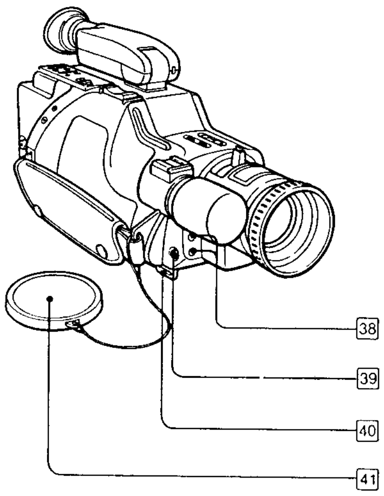
32 SUPERIMPOSE ON/OFF button ㉜

33 DATE (+) and TIME (NEXT) buttons ㉙
Press to display or turn off the date or time.

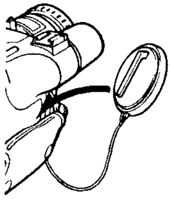
A-4



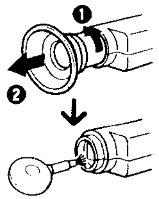
A-5



A-6



A-7



Location and Function of Parts and Controls

A-4

34 VIDEO/AUDIO OUT (output) jacks (phono jacks)

35 RFU DC OUT (RFU adaptor DC output) jack (special minijack)
Supplies power to the RFU adaptor.

36 ⊚ (earphone) jack (minijack)

37 REMOTE connector (stereo mini-minijack)
Connect an optional GP-80 Remote Commander or wired Remote Commander RM-95.
Do not connect other equipment.

A-5

38 MIC jack and DC OUT (microphone power output) jack
Connect an external microphone.
The MIC jack accepts Sony "plug-in-power" microphones and supplies power to them.

39 REC START/STOP button for low position ⑰

40 Hook for shoulder strap
Attach a shoulder strap.

A-6

41 Lens cap
Sqeeze both sides of the lens cap to remove it. Hook it to the grip strap so it won't be lost or hanging loose while recording.

To remove dust from inside the viewfinder A-7
Detach the eyecup as illustrated and clean the surface of the cathode ray tube with a blower.

Power Sources and Cassette Care

Power Sources

Selection of Power Sources

This manual shows the operations on one of the following power sources.

Place		Power source	Accessory to be used
Place	Indoors	House current	AC power adaptor AC-V30 or AC-V55 (page 11)
	Outdoors	Battery pack	Battery pack NP-66H, NP-77H, NP-77 or NP-55 (page 9) Battery case EBP-55 or EBP-77 (page 10)
	In the car	12 V or 24 V car battery	DC pack DCP-55 (page 11) (DCC-16B car battery cord supplied)

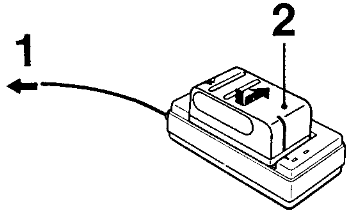
Notes on power source

- Disconnecting the power source or removing the battery pack during recording or playback may damage the inserted cassette tape. If this is done by accident, supply the power again immediately and turn on the power switch.
- Be careful not to let any metal object touched on the metal part on the battery pack or AC power adaptor. When the battery pack is not to be used, keep it in its case.

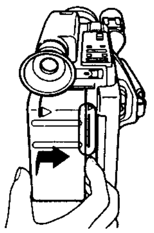
Optional Accessories for Charging

- **AC-V55 AC power adaptor**
  Two battery packs can be charged simultaneously.
- **DC-V30 car battery charger**
  Connect to the cigarette lighter socket of a car to charge an NP-66H/77H/77/55 battery pack, or to supply power to Sony 8 mm video equipment that operates only on NP-66H/77H/77/55.
- **BC-55/77 battery charger**
  Portable battery charger for charging an NP-66H/77H/77/55 battery on 100 – 240 V AC.

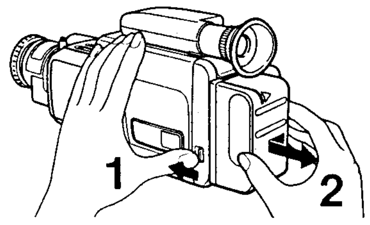
B-1



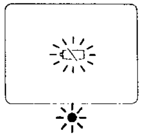
B-2



B-3



B-4



Battery Pack — NP-66H/77H/77/55

First, charge the battery pack. B-1
Use the AC-V30 AC power adaptor.
The charging time is as follows:

NP-66H	Approx. 1 hr. 40 min.
NP-77H	Approx. 2 hr. 20 min.
NP-77	Approx. 2 hr.
NP-55	Approx. 1 hr.

1. Connect the AC-V30 to a wall outlet.
2. Attach the battery pack to the AC-V30.
   Align the grooves on the battery pack with those on the AC-V30, and while pressing the battery pack, slide it as illustrated.

To attach the battery pack to the video camera recorder B-2
Align the right side of the battery pack with the line on the recorder, and while pressing the battery pack, slide it to the right.
Make sure that the battery is fitted completely to the mounting surface. Imperfect fit may damage the projections on the recorder.

To remove the battery pack B-3
While pressing the BATT knob in the arrow direction, slide and pull out the battery pack as illustrated.

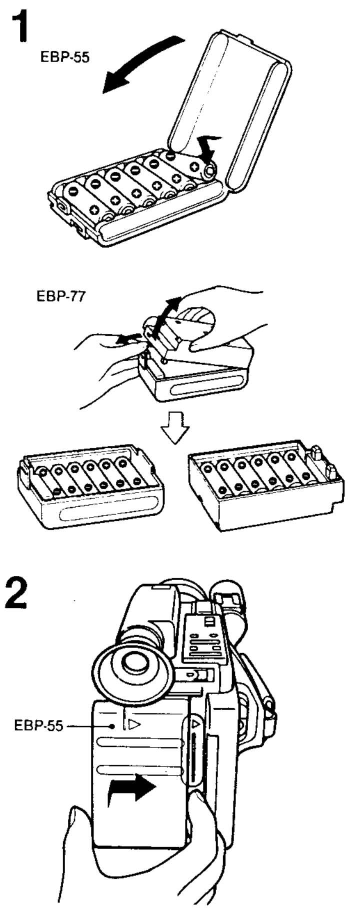
Battery life
A fully-charged battery pack provides continuous camera recording for the following period of time.

NP-66H	Approx. 1 hr. 15 min.
NP-77H	Approx. 1 hr. 55 min.
NP-77	Approx. 1 hr. 20 min.
NP-55	Approx. 40 min.

When the video camera recorder is not in use, remove the battery pack.
If the battery is installed, even if the POWER switch is set to OFF, a very small amount of electric current flows.

When the battery becomes weak B-4
The ▭ indication and red lamp blink in the viewfinder.
Replace the battery pack with the fully charged one.

B-5



Notes

- The video camera recorder consumes power even in the recording pause mode. When recording short scenes using the recording pause mode, the battery life is less than half that of continuous recording.
  When recording is not to be started soon, turn off the power with the STANDBY switch.
- If the battery pack is not fully charged or if it is used in a cold place, its operating time is also shortened.

Battery Case B-5

1. Insert R6 (size AA) alkaline batteries into the battery case.
   EBP-55: 6 batteries
   EBP-77: 12 batteries
2. Align the right side of the battery case with the line on the recorder, and while pressing the battery case, slide it to the right.

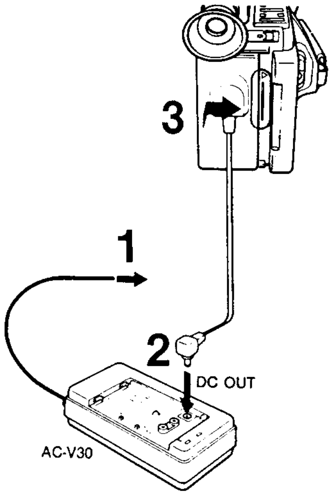
To remove the battery case
While pressing the BATT knob on the recorder, slide and pull out the battery case.

Battery life
EBP-55: Approximately 40 min.
EBP-77: Approximately 120 min.
(with new batteries, continuous recording indoors)

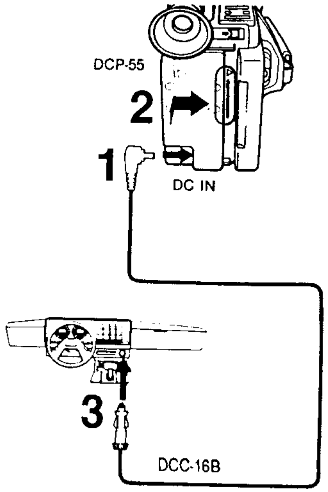
Notes on the battery case

- Be sure to use the alkaline batteries.
- The battery case cannot be used in a cold place.
- The ▭ indication may not blink when the batteries in the battery case become weak, as the voltage of the battery lowers suddenly. If the cassette compartment does not open, replace the batteries.

B-6



B-7



House Current — Using AC Power Adaptor B-6

1. Connect the AC power adaptor to a wall outlet.
2. Insert the connecting cord supplied with the AC-V30 AC power adaptor into the DC OUT jack on the AC power adaptor.
3. Align the right side of the connecting plate with the line on the recorder, and while pressing the connecting plate, slide it to the right.

To remove the connecting plate for the AC power adaptor from the video camera recorder
While pressing the BATT knob on the recorder, slide and pull out the connecting plate.

The optional AC-V55 AC power adaptor can also be used to operate this recorder on house current.

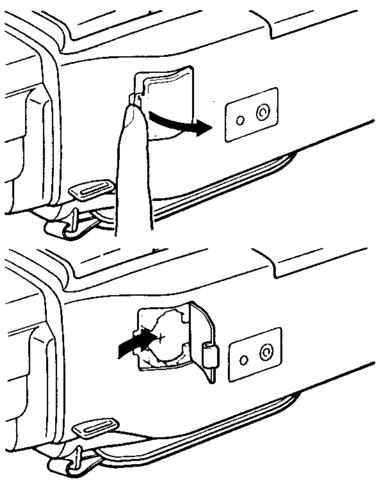
Car Battery — Using the DC Pack B-7

1. Insert the DCC-16B car battery cord supplied with the DCP-55 DC pack into the DC IN jack on the DC pack.
2. Align the right side of the DC pack with the line on the recorder, and while pressing the DC pack, slide it to the right.
3. Connect the DCC-16B car battery cord to the cigarette lighter socket of a car (12 V or 24 V).

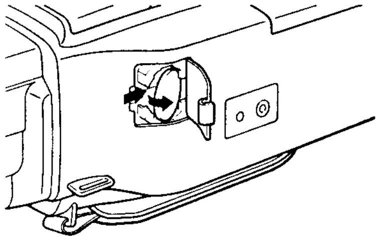
To remove the DC pack from the video camera recorder
While pressing the BATT knob on the recorder, slide and pull out the DC pack.

The optional AC-V55 AC power adaptor and the DCC-16AE car battery cord can also be used to operate this recorder on a 12V or 24V car battery.

C-1



C-2



Power Sources

Lithium Battery C-1

To insert the lithium battery
This unit uses a lithium battery to activate the clock and keep a title in memory. Before operating the unit for the first time, install the supplied lithium battery:

1 Open the cover of the lithium battery compartment on the bottom.
2 Install the supplied CR2025 lithium battery with the ⊕ side facing out.
3 Close the cover.

To remove the lithium battery C-2
Press the side of the battery in the direction as indicated for installation.

Lithium battery life
Approximately 1 year in normal operation. When the lithium battery becomes weak, the time indication will blink on the viewfinder screen for about 5 seconds whenever the POWER switch is set to CAMERA.
In this case, replace the battery with a Sony CR2025 lithium battery. Use of another battery may present a risk of fire or explosion.
After replacing the battery, readjust the date, time and title. (If the battery is replaced with the battery pack attached, the readjustments are not necessary.)

Notes on lithium battery
- Keep the lithium battery out of the reach of children.
  Should the battery be swallowed, immediately consult a doctor.
- Wipe the battery with a dry cloth to assure a good contact.
- Be sure to observe the correct polarity when installing the battery.
- Do not hold the battery with metallic tweezers, otherwise a short-circuit may occur.
- Do not break up the battery nor throw it into a fire, which might cause it to explode. Carefully dispose of the used batteries.

Selection of the Automatic or Manual Adjustments

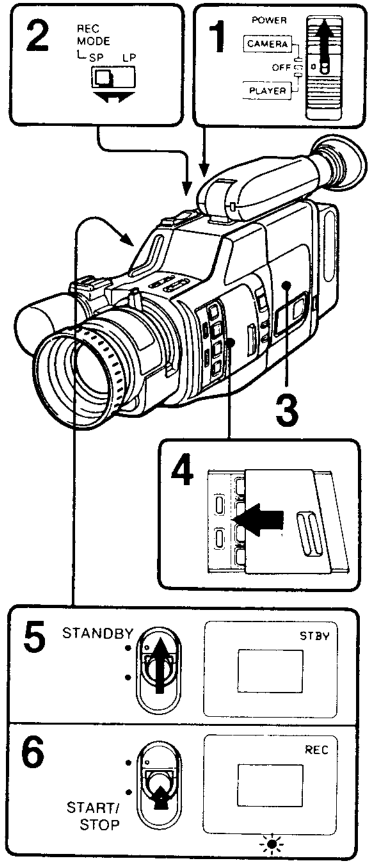
When the AUTO LOCK cover is closed, the white balance, shutter speed (1/50), focus and iris are adjusted automatically. But under certain circumstances, manual adjustment is better for effective recording.

When the AUTO LOCK cover is slid open, each manual function works as follows.

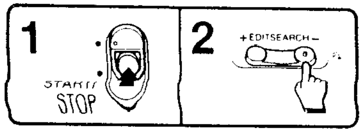
Each push of the button cyclically changes each function and the indication on the viewfinder changes.	
WHITE BAL See page 23.	No indication → HOLD → ☀ → ☼ (Auto)
SHUTTER SPEED See page 25.	No indication → 120 → 250 → 1000 → 2000 → 4000 (1/50) (1/120)(1/250)(1/1000)(1/2000)(1/4000)
FOCUS See page 21.	Auto focusing zone → ■ (Auto) (Manual)
BACK LIGHT See page 24.	No indication → ▨ (Back light)

Notes
- Just after the battery pack is attached to the recorder, the AUTO LOCK function will work even if the AUTO LOCK cover is opened.
- If the AUTO LOCK cover is closed after each function is adjusted manually, and then opened again, the previous manual setting will be recalled.

F-1



F-2



Easy Camera Recording with Automatic Adjustment

How to Record

F-1

1 While pressing the small button, set the POWER switch to CAMERA.
2 Insert the cassette.
3 Set the REC MODE selector to LP or SP, according to the length of the programme to be recorded.
4 Keep the AUTO LOCK cover closed.
5 Slide the STANDBY switch up. The unit will enter the recording pause mode.
6 Press the START/STOP button. Recording will start.

Check on the viewfinder screen
STBY: Displayed during recording pause mode.
REC: Displayed during recording.

To stop recording
Press the START/STOP button again.
The unit will enter the recording pause mode. Avoid rough handling or mechanical shock to the unit. A smooth transition between scenes may not be made.

F-2

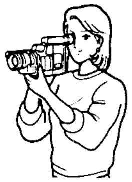
To check the last portion of the previous recording (Recording review)
1 Set the recorder in recording pause mode by pressing the START/STOP button.
2 Press the – ⊜ EDITSEARCH button momentarily.

The last few seconds of the recorded portion are rewound and then the recorded picture is monitored on the viewfinder screen. The unit then enters the recording pause mode.

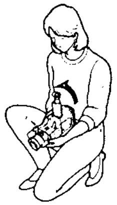
If the picture has not been recorded
The video head may be contaminated. Clean the heads using the Sony V8-25CLH video head cleaning cassette.

After using
Slide the STANDBY switch down and set the POWER switch to OFF. (You need not press the centre button when setting the switch to OFF.)

F-3



F-4



Easy Camera Recording with Automatic Adjustment

Hold the camera recorder as in the illustration.
If your nose touches the recorder, adjust the angle of the viewfinder. F-3

F-4

For low position recording
The viewfinder can be turned 90 degrees up.
1 Slide the STANDBY switch up.
2 Press the START/STOP button on the right front.

Note on power source
If the POWER switch is moved during recording, the tape will stop.

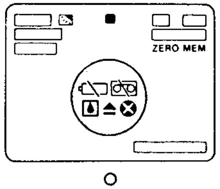
Notes on light sources
- Should you shoot a subject in bright conditions such as sunlight just after shooting in a dark place, the picture may not appear on the viewfinder screen. In this case, move the camera away from the subject to resume the normal condition.
- A vertical band may appear when a subject such as a candle flame or a light is shot against a dark background.

Notes on playback on another VTR
- To view the picture which has been recorded on this unit, set the monitor switch of the recorder for playback to the STD (standard) position.
- When recording on this unit using a tape on which PCM stereo sound has previously been recorded, set the monitor switch of the video cassette recorder for playback to the STD (standard) position. Otherwise, the sound may not be heard or may be distorted.

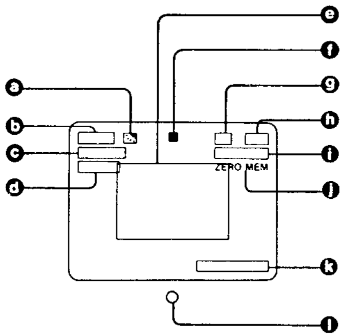
Notes on automatic adjustment
- During recording with auto focusing, do not turn or stop the focus ring (lens hood) forcibly.
- Keep the lens clean.

The camera recording with automatic adjustment may not produce optimum results under certain conditions. In this case, manually adjust the focus, white balance, back light and shutter speed. See pages 20, 22, 24 and 25.

F-5



F-6



Indications inside the Viewfinder

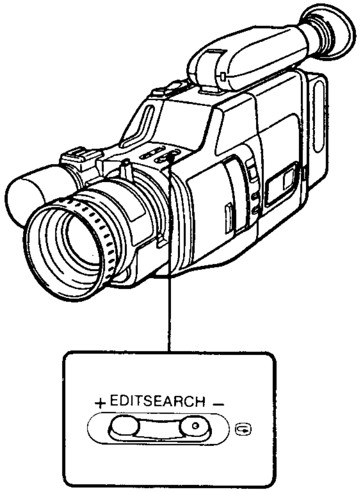
Indications for caution F-5

🔋	Slow blinking • The battery is weak. Fast blinking • The battery is exhausted.
📼	Slow blinking • No cassette is inserted. • The tab on the cassette is out (red). Fast blinking • The tape is at its end.
⏏	Blinking • A fault has occurred in the unit. See back cover.
⊗	Blinking • The gap of the video head is clogged. (Head contamination) See back cover.
💧	Blinking • Moisture has condensed inside the unit.

Indications for showing the function in use F-6

ⓐ	The back light function has been activated.
ⓑ	Indicates the white balance mode.
ⓒ	Indicates the title mode.
ⓓ	Indicates the shutter speed.
ⓔ	Indicates the auto focusing zone.
ⓕ	• Lights when the focus function has been set to manual. • Blinks when the auto focus function may not work correctly due to low light or low contrast. See page 20.
ⓖ	Indicates the recording/playback mode (SP/LP).
ⓗ	In the VTR operation mode, this indicates the tape transport function.
ⓘ	Indicates the tape counter.
ⓙ ZERO MEM	Blinks when the ZERO MEM button has been pressed.
ⓚ	Indicates the date or time.
ⓛ	• Lights in red during recording. • Blinks when the battery is weak.

F-7



Instant Playback on the Spot F-7

You can monitor the picture just recorded on the viewfinder screen.

1 While pressing the small button, set the POWER switch to CAMERA.
2 Slide the STANDBY switch up.
3 Keep pressing the "–" side of the EDITSEARCH button to view the playback picture in reverse.
4 Keep pressing the "+" side of the EDITSEARCH button to view the playback picture.

During Recording, to Record Again on the Previous Recorded Portion (Editsearch 1)

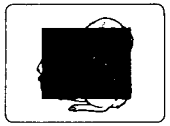
1 Slide the STANDBY switch up.
2 Monitor the picture on the viewfinder screen and locate the point from which the recording is to begin again with the EDITSEARCH button.
Press the "+" side of the EDITSEARCH button to advance the picture at a normal playback speed, or the "–" side to reverse the picture.
3 At the desired point, release the EDITSEARCH button.
The unit will be set to recording pause mode.
4 Press the START/STOP button to start recording.

Smooth recording can be made even if the recording is stopped and started again, or even if the power is turned off and on again, provided that the cassette is not removed. But, if the cassette has been removed, proceed as above.

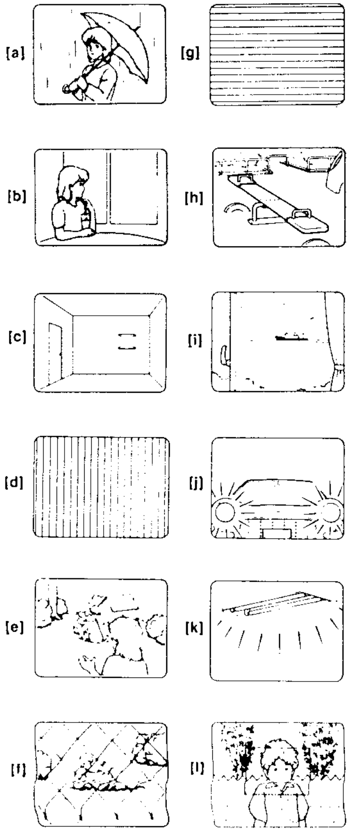
To monitor the sound while viewing the playback picture on the viewfinder screen
Connect an earphone to the 🎧 jack.
1 While pressing the small button, set the POWER switch to PLAYER.
2 Press the ◀◀ button to rewind the tape.
3 Press the □ button to stop the tape.
4 Press the ▷ button to start playback.

To stop the playback, press the □ button.

G-1



G-2



Manual Focusing

When the AUTO LOCK cover is closed, correct focusing is obtained in most cases if the subject is displayed in the auto focusing zone (illustrated in blue). G-1
Use manual focusing when shooting subjects difficult to focus automatically.

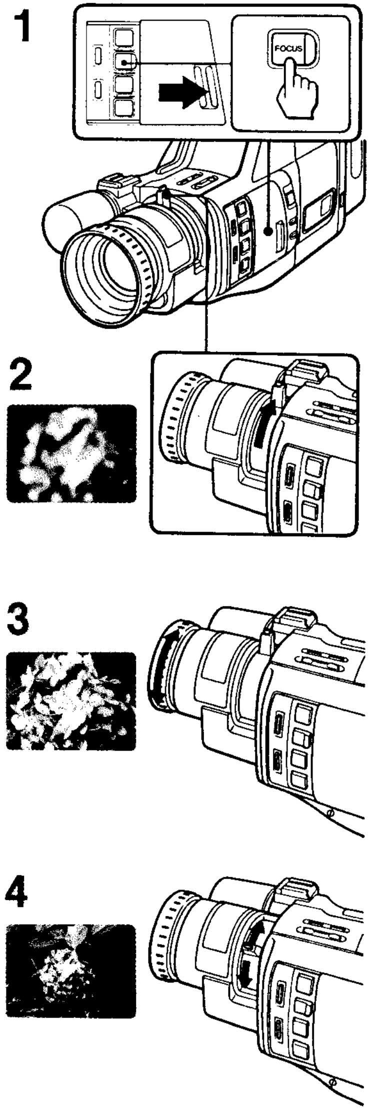
Poor Conditions for Auto Focusing G-2

[a] Insufficient light
[b] Too much bright light behind the subject
[c] Subjects with flat colours and less contrast — wall, sky, etc.
[d] Finely detailed repetitive patterns
[e] When the distance between subjects at the centre is extreme (e.g. one subject is close, the other is away)
[f] Subjects beyond screens, nets, etc. or when another subject passes across the camera
[g] Horizontal stripes
[h] Diagonal object
[i] When there is frosted glass between the shooting object and the recorder
[j] Bright object or object reflecting light
[k] When shooting under a fluorescent lamp at the shutter speed set to 1/250, 1/1000, 1/2000 or 1/4000
[l] When there is a high contrast background within the auto focusing zone (The background may be focused.)

Other Uses of Manual Focusing

- When the white mark inside the viewfinder blinks
- When using special effects lenses or filters
- When shooting still subjects on a tripod
- To save battery wear
  (As long as the AUTO LOCK cover is closed, the auto focusing operates and the focus ring moves automatically even in recording pause mode. This causes the battery to wear continuously.)
- For focusing in close-up shooting.

G-3



Notes
Since the auto focusing system of this unit detects the contrast of the video signal for accurate focusing, it does not function momentarily in these cases:
- When the shutter speed or the white balance is changed
- When the back light is being adjusted
- When lighting conditions change quickly
- When the zooming is changed from wide-angle to telephoto

It may take several seconds to get focus when the camera is rapidly panned from a distant subject to a near subject with less contrast. In this case, adjust the focus manually.

Note on automatic adjustment
During recording with auto focusing, do not turn or stop the focus ring forcibly.

To Focus Manually G-3

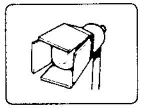
1 Slide open AUTO LOCK cover and press the FOCUS button.
The white mark (■) will be shown in the viewfinder.
2 Turn the manual zoom lever to the telephoto position (68) to make the subject as large as possible in the viewfinder.
3 Turn the lens hood (focus ring) to achieve sharp focus.
4 Set the desired shot length using the manual zoom lever.

Some helpful hints
- When shooting a scene with lots of movement in bright light, the subject can be kept in good focus by setting the zoom lever to the wide-angle position and the focus ring to 2 m, regardless of the distance between the subject and the recorder.
- When shooting in low light situations such as indoors, the depth of field in proper focus is very shallow. For best results, shoot at wide angles, after focusing in telephoto.
- The figures on the focus ring indicate the distance between the subject and the Φ mark beneath the AUTO LOCK cover.
- Recommended illumination of this unit is more than 300 lux (28 footcandles). If shooting is done indoors or under other circumstances where light is insufficient, video lights must be used for best results. Under adequate light condition, the depth of field in proper focus is wider and a sharper picture will be recorded.

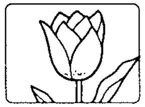
H

[a]

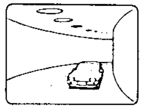
[b]



[c]

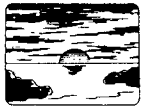


[d]



[e]

[f]



Manual White Balance Adjustment

When the AUTO LOCK cover is closed, the auto white balance function of this unit operates automatically in most cases. However, if it does not work correctly in the conditions listed below, adjust the white balance manually.

Difficult Conditions for Auto White Balance H

Recording condition		Indication in the viewfinder
[a]	When lighting conditions change quickly	☼
[b]	When the light source for the subject is different from that illuminating this unit, such as when the subject is in a spotlight, etc.	☼
[c]	When shooting a monochromatic subject or the background is monochromatic	HOLD
[d]	When recording under a sodium lamp	☼
	When recording under a mercury lamp	☼
	When recording under a colour matching fluorescent lamp	☀
[e]	When recording outdoors, such as a night view, neon sign or fireworks	☀
[f]	When recording outdoors, such as scenes after sunset or scenes before sunrise.	☀

To Adjust the White Balance Manually

1 While pressing the small button, set the POWER switch to CAMERA.
2 Slide open the AUTO LOCK cover.
3 Select the desired white balance mode by pressing the WHITE BAL button.
Each push of the WHITE BAL button cyclically changes the indication inside the viewfinder.

No indication (Auto) → HOLD → ☀ → ☼
↑___________________________________|

For the colour temperature and the white balance adjustment, see page 49.

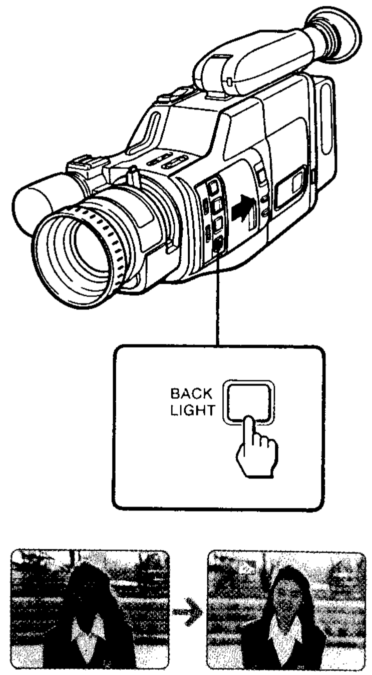
To adjust the white balance precisely

1 Set the WHITE BAL button to auto mode (no indication).
2 Point the recorder to a white, flat object such as a white wall, paper, etc.
3 Press the WHITE BAL button to indicate the HOLD mark inside the viewfinder.
The correct white balance is memorized.

Notes

- When the power is turned off or the light source is changed, reset the HOLD mode again.
- The white balance is related to back light and shutter speed adjustment. When the shutter speed has been adjusted manually with the AUTO LOCK cover opened, and then if the recorder is moved from indoors to outdoors, or vice versa, close the AUTO LOCK cover and open it again.
- When using the recorder in the automatic adjustment mode with the AUTO LOCK cover closed, and then moving from indoors to outdoors, or vice versa, slide the STANDBY switch up and point the recorder to a white object for about 10 seconds so that the white balance is adjusted properly.

I



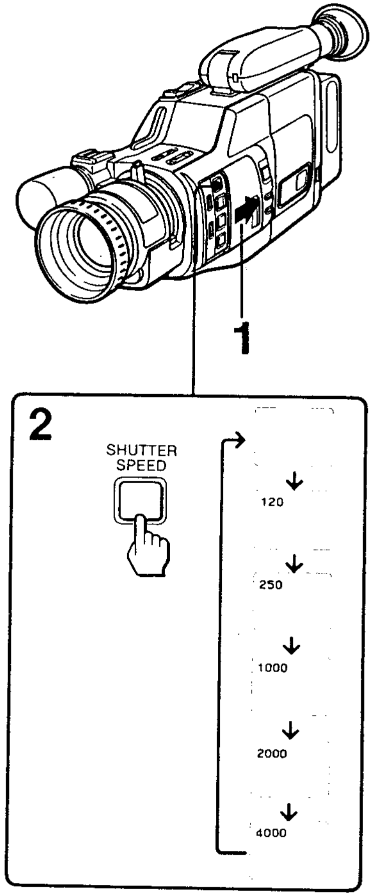
Back Light Adjustment I

This unit adjusts the iris automatically. However, when shooting a subject that is backlit, slide open the AUTO LOCK cover, and press the BACK LIGHT button.
The ▨ indication appears on the viewfinder screen.

After shooting that particular scene, be sure to press the BACK LIGHT button again to release it. Otherwise the recorded picture will be too bright.

Note
The function will be released once the POWER switch is set to OFF.

J



Shutter Speed Adjustment

When a fast-moving subject is recorded at a normal shutter speed, the picture may not be seen clearly when played back. This can be improved by increasing the shutter speed.
The shutter speed of this unit can be selected from six speeds, 1/50 (normal speed), 1/120, 1/250, 1/1000, 1/2000 or 1/4000 second.
However, when the shutter moves fast, it will not allow enough light to come into the lens, so the picture will be dark. Therefore, when recording at a high shutter speed, record in a brighter place than usual.
Choose an appropriate shutter speed according to the place and situation.
See the chart below for examples.

Example use	Recommended shutter speed
• On clear days, recording golf or tennis scenes (To view the hit ball clearly in the pause mode, set to 1/4000) • Recording the skiers	1/4000 or 1/2000
• On overcast days, recording a moving merry-go-round or jet-coaster • Recording outdoors from inside a vehicle (for stable shooting)	1/1000 or 1/250
• Instead of the ND2 filter (To reduce the exposure level to approx. 1/2) • Recording indoors (for stable shooting)	1/120

J

1. Slide open the AUTO LOCK cover.
2. Press the SHUTTER SPEED button repeatedly until the desired shutter speed indication appears on the viewfinder screen. Each time the SHUTTER SPEED button is pressed, the indication changes:

```
No
indication → 120 → 250 → 1000 → 2000 → 4000
  (1/50)      (1/120)(1/250)(1/1000)((1/2000)(1/4000)
   ↑_____________________________________________|
```

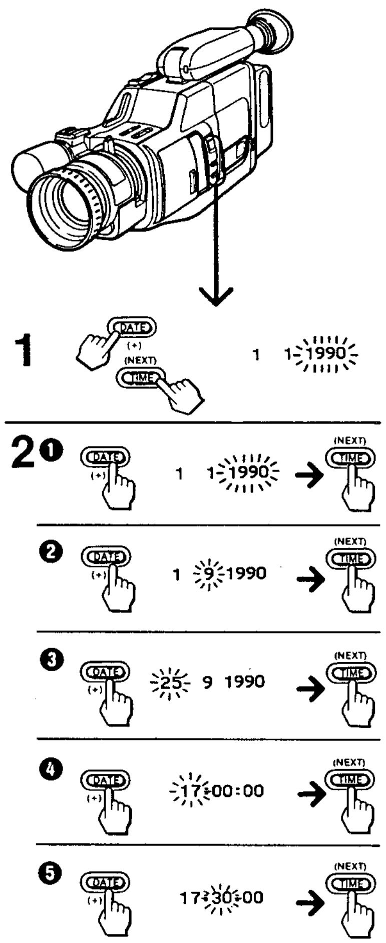
Auto focus will not function when a shutter speed other than the normal speed and 1/120 is selected under a fluorescent lamp.
When shooting, use manual focusing.

Shutter Speed Adjustment

Notes

- A ghost image will appear in still picture mode of this unit. To view a clear still or slow picture, use another video cassette deck with the clean still/slow function.
- When shutter speed 1/250 or faster is selected, recording must be done under sunlight or video light.
- When the shutter speed is changed during a camera recording of a TV screen, the brightness of the recorded picture may vary.
- When a very bright object is shot at a faster shutter speed, a light, vertical, belt-like line ("smear") may appear on the screen.
- When the recording is done under a light discharged tube, such as a fluorescent lamp, sodium lamp, or mercury lamp, the brightness of the recorded picture may vary ("flicker").

M-1



Recording Date or Time

Once the date and the current time are adjusted, the date or time can be recorded together with the picture.

- Make sure that the fully-charged battery pack and lithium battery are installed.
- Set the POWER switch to CAMERA, and slide the STANDBY switch up.

To Set Date and Time M-1

1 Press the DATE and TIME buttons **simultaneously for more than 3 seconds.** The date indication will appear in the viewfinder (date/time setting mode). The DATE button now functions as the + button and the TIME button functions as the NEXT button.

2 Adjust the ❶ year, ❷ month, ❸ day, ❹ hour and ❺ minute in sequence, following the illustration. First adjust the blinking digits with the + button, and then press the NEXT button. After adjusting the minute digits, press the NEXT button at the same time with an announced time signal.

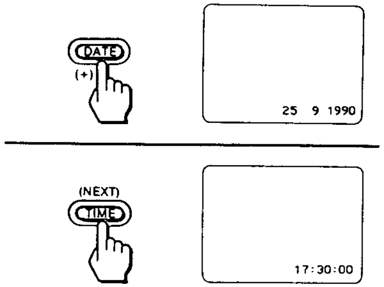
The clock starts operating. There is no need to readjust the date and time as long as the lithium battery remains.

To clear the time indication from the display
Press the TIME (NEXT) button again.

The + button can be pressed in two ways

- When you keep the button pressed, the digits will advance continuously.
- When you press and immediately release the button, the digits will advance by one.

M-2



Recording Date or Time

To check the preset date and time
Press the DATE or TIME button in the recording pause mode. When the same button is pressed again, the indication goes off.

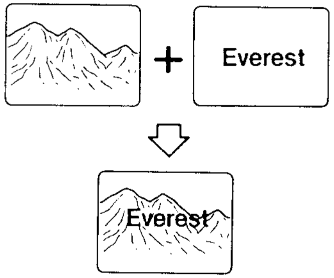
To readjust an incorrect date or time
Set the unit to date/time setting mode and press the NEXT button repeatedly until the incorrect digit blinks. Correct it with the + button and press the NEXT button. After adjusting the minute digits, press the NEXT button at the same time with an announced time signal.

To Record the Date or Time M-2

During camera recording or in recording pause mode, press the DATE or TIME button to display the date or time on the viewfinder screen.
The date or time being displayed will be recorded together with the picture.

To stop recording the date or time
Press the DATE or TIME button again. The picture recording will continue.

N-1



Recording a Title

Before recording, memorize a title or figure. The memorized title or figure is superimposed onto the picture being recorded. N-1

The colour of the title or figure can be selected from 8 colours.

Make sure that the lithium battery is installed. See page 12.

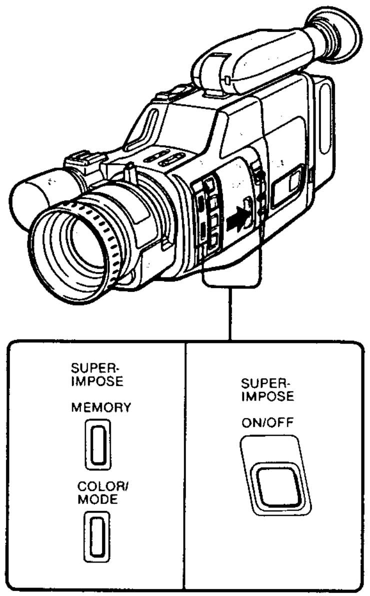
To make a desired title card
- Use a white and plane card and draw the title on it with a deep colour (black is recommended for the best result) in thick letters.
  If contrast is clear, a signboard can be memorized like the title card.
- When deciding the title size, check the effective picture size on your video monitor.

Before memorizing a title
- Fix the title card and the video camera recorder.
- Use of an appropriate light is recommended for a better result.

Function of the COLOR/MODE button
This button is used to select the title colour or title mode.

When the title is displayed	**When the title is not displayed**
Used as the COLOR button.	Used as the MODE button.
→WHT→BLUE→GRN→CYAN (white) (green) BLK←YEL←VIO←RED← (black) (yellow) (violet)	No title mode ← → ↑ → 🅃 → 🅃↑ ↑ : title scroll mode 🅃 : title reverse mode 🅃↑ : title reverse and scroll mode
Each push of the COLOR/MODE button cyclically changes the colour or mode.	

N-2



To Memorize the Title N-2

1 While pressing the small button, set the POWER switch to CAMERA.
2 Slide up the STANDBY switch to set the unit in the recording pause mode.
3 Point the camera to the title card and adjust the focus.
4 Press the MEMORY button to memorize the title.
5 Select the title colour while observing the colour indication in the viewfinder. Each push on the COLOR/MODE button cyclically changes the colour, as follows:

WHT (white) → BLUE → GRN (green) → CYAN
↑ ↓
BLK (black) ← YEL (yellow) ← VIO (violet) ← RED

6 Press the ON/OFF button to turn off the title.

Notes
- The colour indication in the viewfinder is not recorded on the tapes.
- You can change the title colour even after starting the recording.
- If you open the AUTO LOCK cover half to expose the SUPERIMPOSE buttons only, you can memorize the title with the automatic adjustment.

To check the title
To check the memorized title, press the ON/OFF button. To turn off the title, press the button again.

To Record the Title

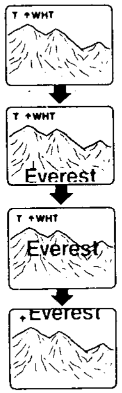
To record the title from the beginning
Press the ON/OFF button in recording pause mode, and then start recording.

To record during camera recording
Press the ON/OFF button at the point from which the title is to be inserted.
The memorized title will be recorded together with the picture.

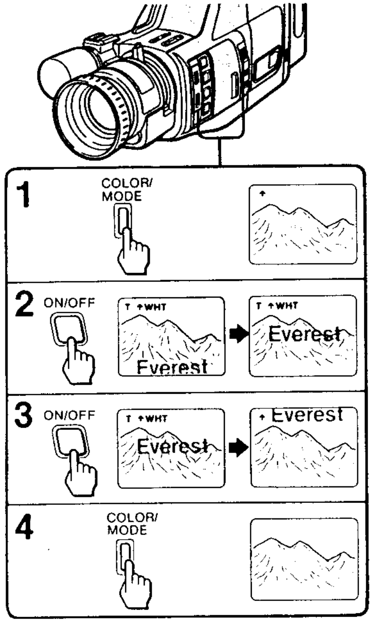
To stop recording the title
Press the ON/OFF button again. The picture recording will continue.

To record the same title several times
By repeating the above procedure, you can record the title as many times as desired.

N-3



N-4



To Scroll the Title from Bottom to Top

During recording, the memorized title can be scrolled from bottom to top. N-3

To check the scrolled title N-4
1 In the recording pause mode, press the COLOR/MODE button.
The arrow mark will be displayed.
2 Press the ON/OFF button.
The title will be displayed from bottom to centre.
3 Press the ON/OFF button again.
The title will be displayed from centre to top.
4 Press the COLOR/MODE button **three times.**
The arrow mark will disappear.

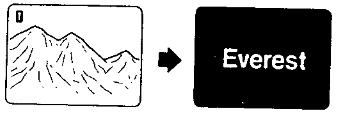
To record the scrolled title
1 In the recording pause mode, press the COLOR/MODE button.
The arrow mark will be displayed.
2 Start the camera recording.
3 Press the ON/OFF button at the point from which the scrolled title is to be recorded.
4 After the title stops at the centre of the picture, press the ON/OFF button again.
The title is scrolled from centre to top.

To clear the scroll mode
After recording, press the COLOR/MODE button **three times.**

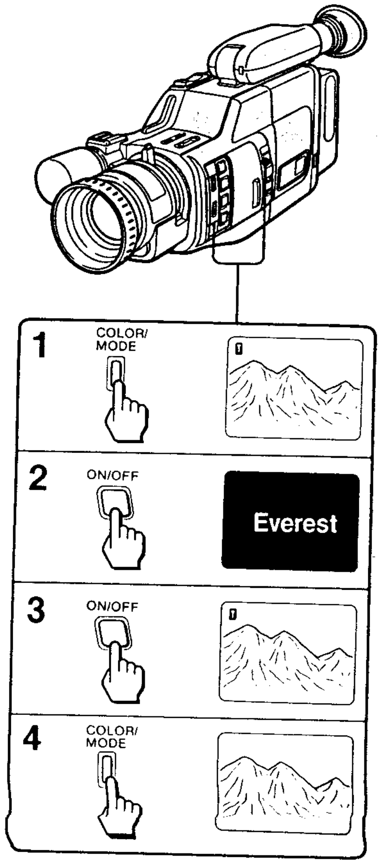
If you do not want to record the picture for the background
Point the recorder to a white, flat object such as a white wall, paper, etc.

To change the colour of the title
While the title is being scrolled or displayed at the centre, press the COLOR/MODE button.

N-5



N-6



To Reverse the Title and the Background

The colour scheme of the title and the background can be reversed. N-5

To check the reversed picture N-6

1. In the recording pause mode, press the COLOR/MODE button **twice**.
   The T mark will be displayed.
2. Press the ON/OFF button.
   The reversed title and background will be displayed.
3. Press the ON/OFF button again.
4. Press the COLOR/MODE button **twice**.
   The T mark will disappear.

To record the reversed picture from the beginning

1. In the recording pause mode, press the COLOR/MODE button **twice**.
   The T mark will be displayed.
2. Press the ON/OFF button.
3. Start the camera recording.
4. Press the ON/OFF button again to clear the reversed picture.

To record the reversed picture during recording

1. In the recording pause mode, press the COLOR/MODE button **twice**.
   The T mark will be displayed.
2. Start the camera recording.
3. Press the ON/OFF button at the point from which the reversed picture is to be recorded.
4. Press the ON/OFF button again to clear the reversed picture.

To clear the reverse mode

After recording, press the COLOR/MODE button **twice**.

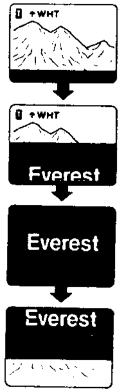
If you do not want to record the picture for the background

Point the recorder to a white, flat object such as a white wall, paper, etc.

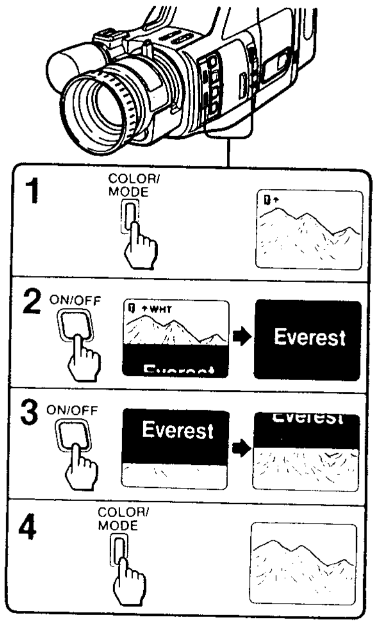
To change the colour of the background

While the title is being displayed, press the COLOR/MODE button.

N-7



N-8



To Scroll the Reversed Title N-7

To check that the reversed title is scrolled N-8

1. In the recording pause mode, press the COLOR/MODE button **three times**.
   The T↑ mark will be displayed.
2. Press the ON/OFF button.
   The reversed picture will be displayed from bottom to centre.
3. Press the ON/OFF button again.
   The title will be displayed from centre to top.
4. Press the COLOR/MODE button **once**.
   The T↑ mark will disappear.

To record the reversed and scrolled title

1. In the recording pause mode, press the COLOR/MODE button **three times**.
   The T↑ mark will be displayed.
2. Start the camera recording.
3. Press the ON/OFF button at the point from which the scrolled title is to be recorded.
4. After the reversed title stops at the centre of the picture, press the ON/OFF button again.
   The reversed title is scrolled from centre to top.

To clear the reversed scroll mode

After recording, press the COLOR/MODE button **once**.

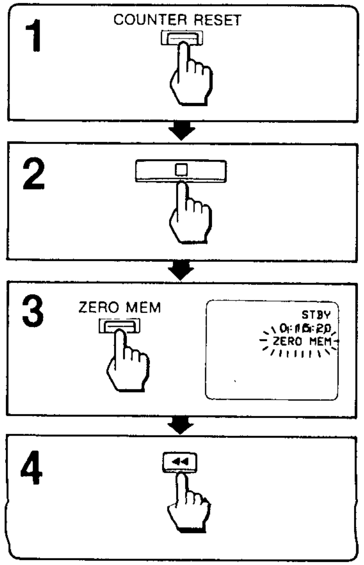
If you do not want to record the picture for the background

Point the recorder to a white, flat object such as a white wall, paper, etc.

To change the colour of the background

While the title is being scrolled or displayed at the centre, press the COLOR/MODE button.

S



Use of the Tape Counter

During recording or playback, the digits on the counter indicate the actual recording or playback time.

To Index the Whole Tape

Press the COUNTER RESET button at the beginning of the tape so that the counter shows "0:00:00". By noting the counter reading at a particular point, you can easily find that point later by referring to the tape counter.

Notes

- The counter reading and the point of the tape may not correspond exactly. Use the counter as a guide.
- The counter does not operate for a blank, unrecorded portion of a tape.
- There will be a time lag of several seconds on the counter reading after repeated fast-forward and rewind operations.
- There will be also a time lag of several seconds when the tape recorded in LP and SP modes mixed or the tape having a blank portion between the recorded portions is played back.

To Return to a Pre-registered Point S

1. During recording or playback, press the COUNTER RESET button at the point you later want to locate.
2. Press the ☐ button when the recording or playback has finished.
3. Press the ZERO MEM button. The "ZERO MEM" indicator will blink in the display window.
4. Press the ◀◀ or ▶▶ button.
   The tape will be rewound or sent forward and stop automatically when the counter reaches approximately zero.

To cancel ZERO MEM mode
Press the ZERO MEM button so that the ZERO MEM indicator disappears.

Notes

- The ZERO MEM button does not function during recording or playback mode.
  Be sure to press the ZERO MEM button when the tape is stopped.
- The ZERO MEM mode is cancelled automatically once the tape is rewound or sent forward to zero.

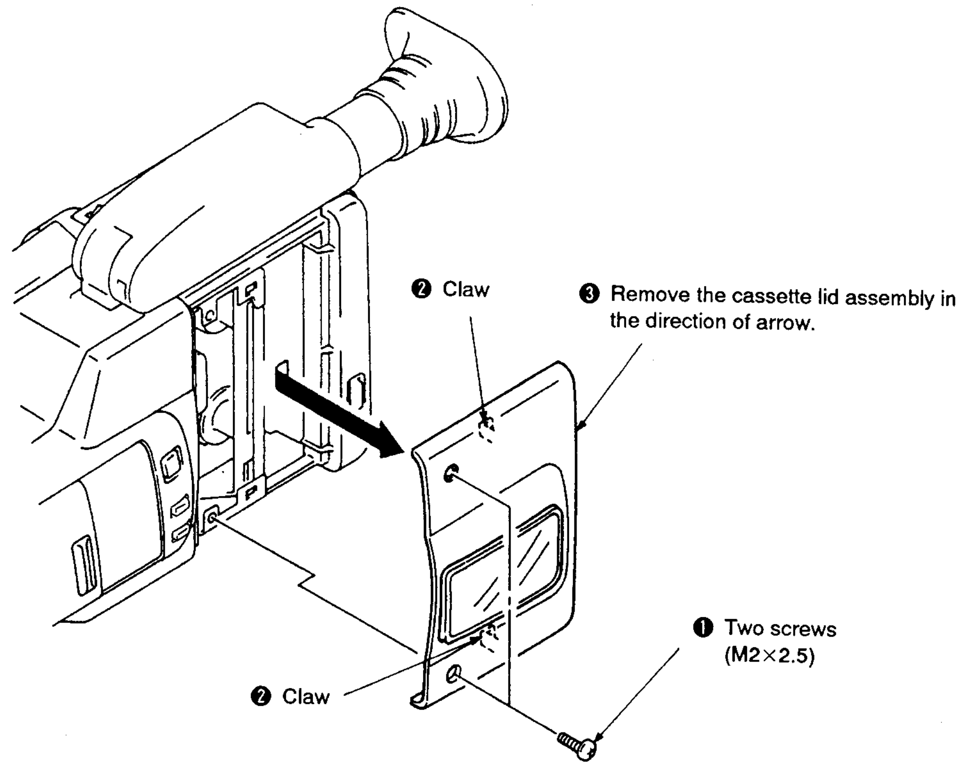
Trouble Indicators

○ when the indicator appears ☐ slow blinking ☐ fast blinking

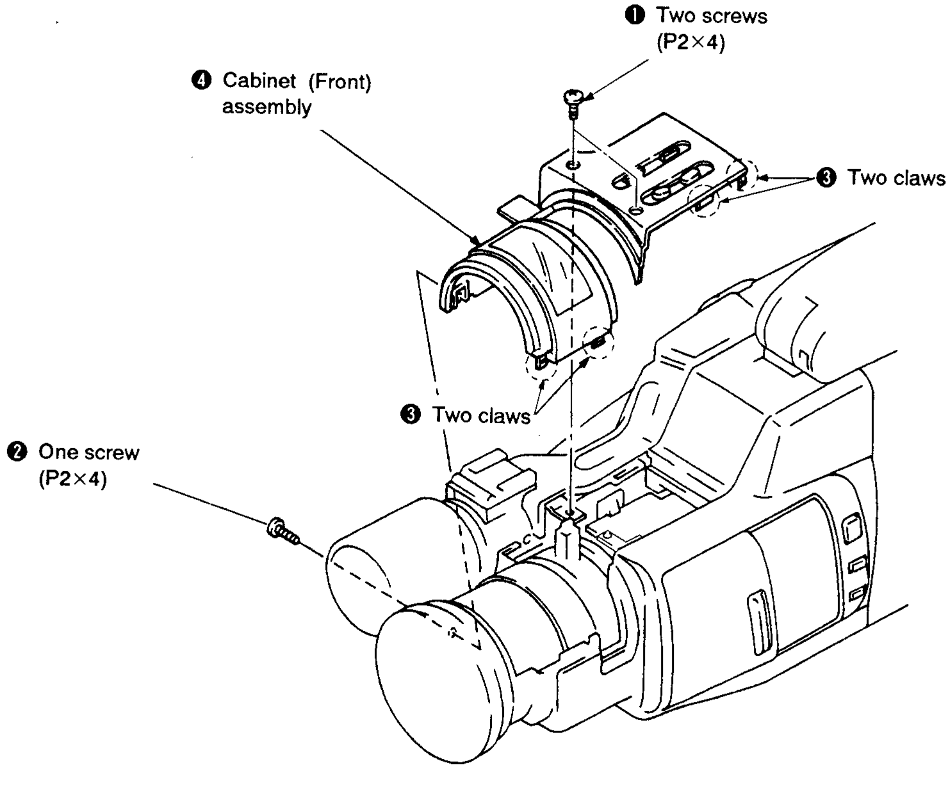
	Position of the POWER switch		Indicator	
Cause	PLAYER	CAMERA	Indicator to be shown inside the viewfinder	Camera recording/ battery lamp
The battery is fully exhausted.	○	○	🪫	
The battery is weak.	○	○	🪫	
The tape is at its end.		○	📼 ⏏	
No cassette is inserted.		○	📼	
The tab on the cassette is out.		○	📼 ⏏	
Moisture has condensed inside the unit.	○	○	💧 ⏏	
The gap of the head is clogged.	○	○	⊗	
Other troubles	○	○	⏏	
The lithium battery is fully exhausted.		○	0:00:00 (5 seconds) ⇩ 1. 1. 1990 0:00:00	
The lithium battery is weak.		○	Time (5 seconds) ⇩ Normal indication for the operation	

SECTION 2
DISASSEMBLY

2-1. REMOVAL OF CASSETTE LID ASSEMBLY

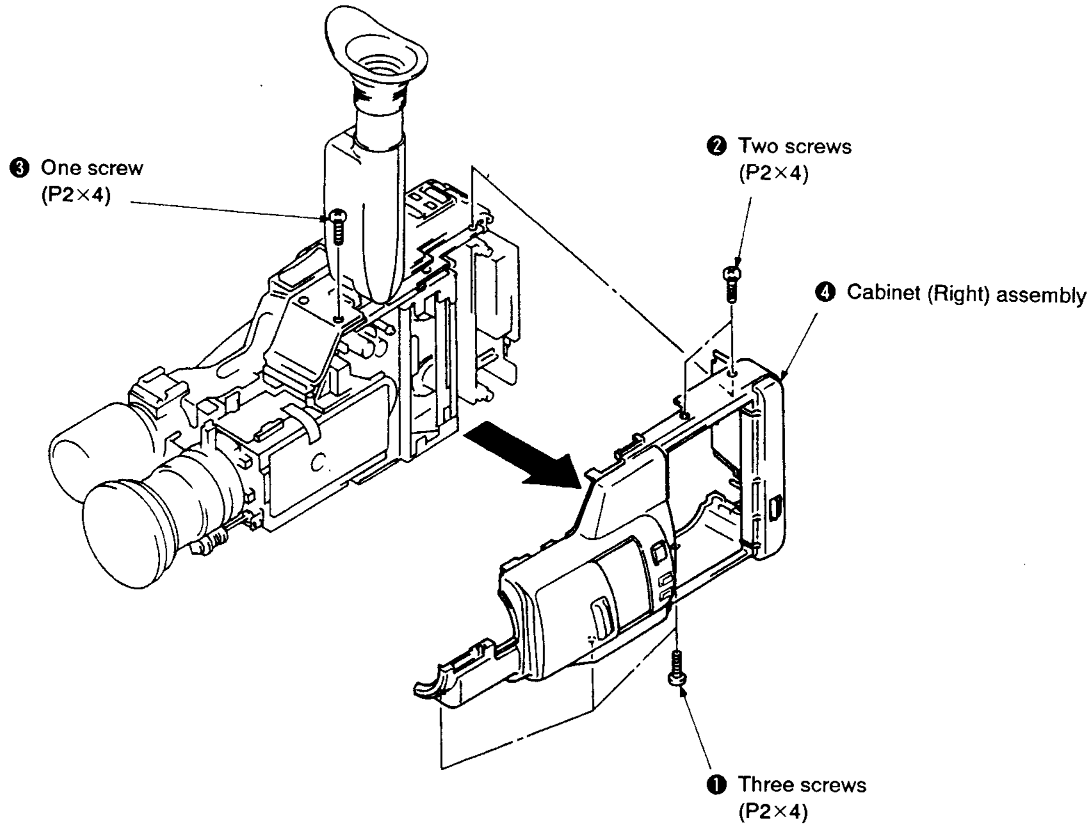

❷ Claw
❸ Remove the cassette lid assembly in the direction of arrow.
❶ Two screws (M2×2.5)
❷ Claw

2-2. REMOVAL OF CABINET (FRONT) ASSEMBLY

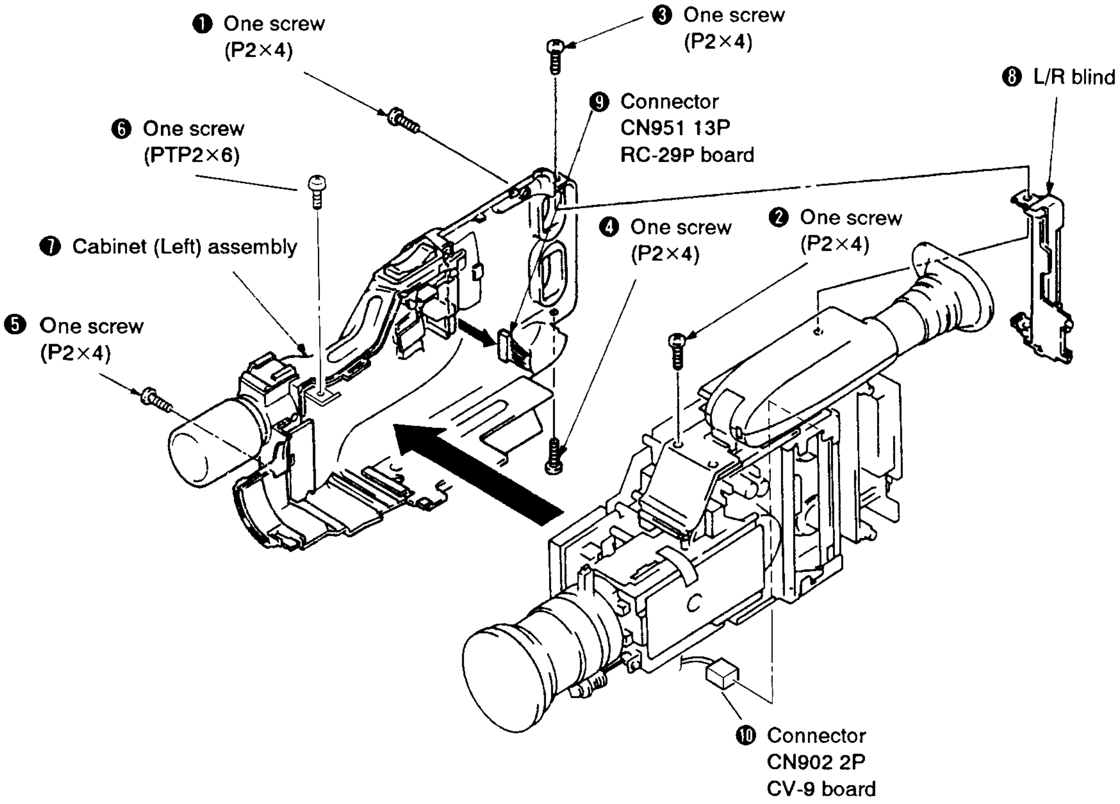

❶ Two screws (P2×4)
❹ Cabinet (Front) assembly
❸ Two claws
❸ Two claws
❷ One screw (P2×4)

2-3. REMOVAL OF CABINET (RIGHT) ASSEMBLY

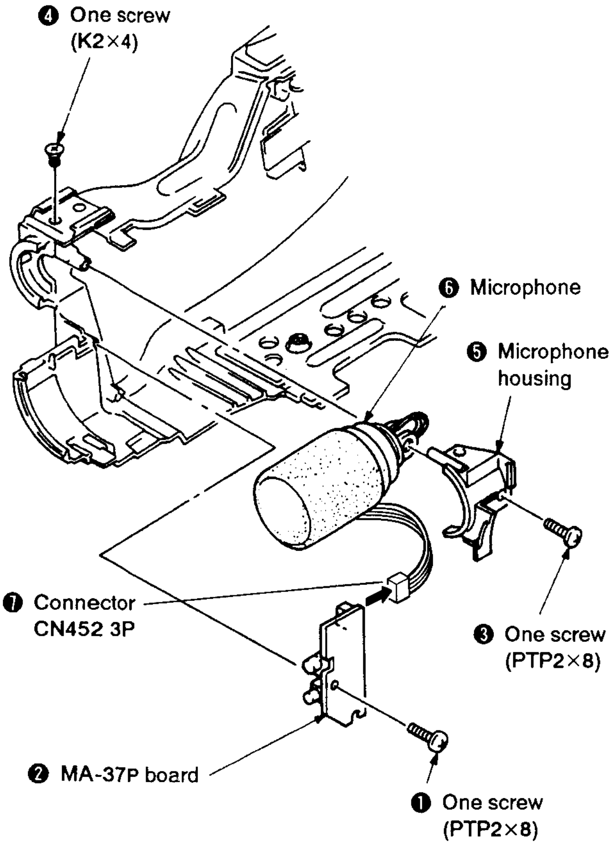
Note: Perform this servicing with EVF raise as the figure below.


❸ One screw
(P2×4)
❷ Two screws
(P2×4)
❹ Cabinet (Right) assembly
❶ Three screws
(P2×4)

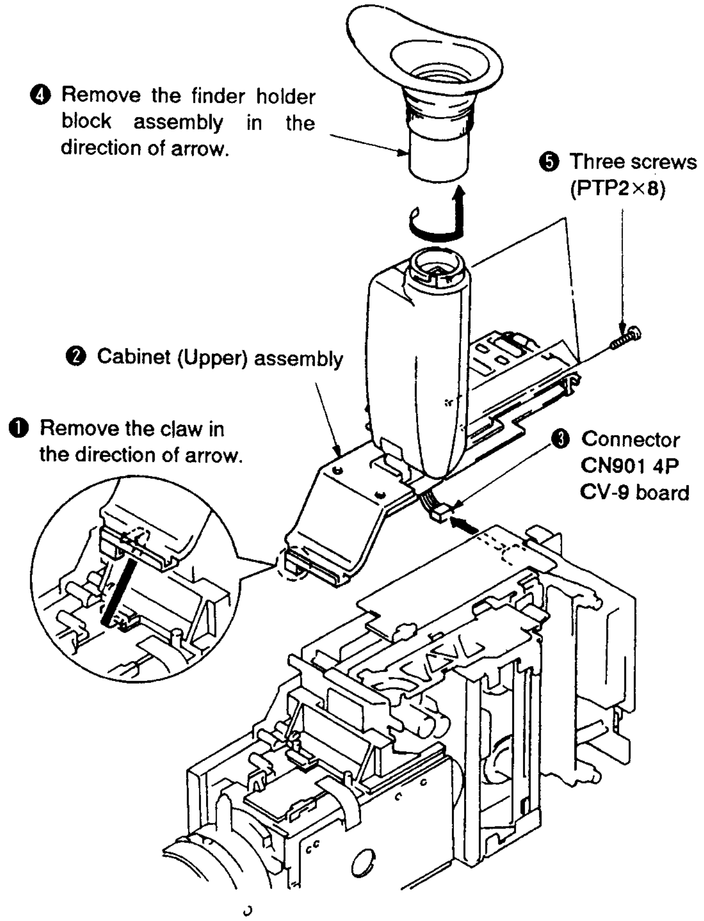
2-4. REMOVAL OF CABINET (LEFT) ASSEMBLY

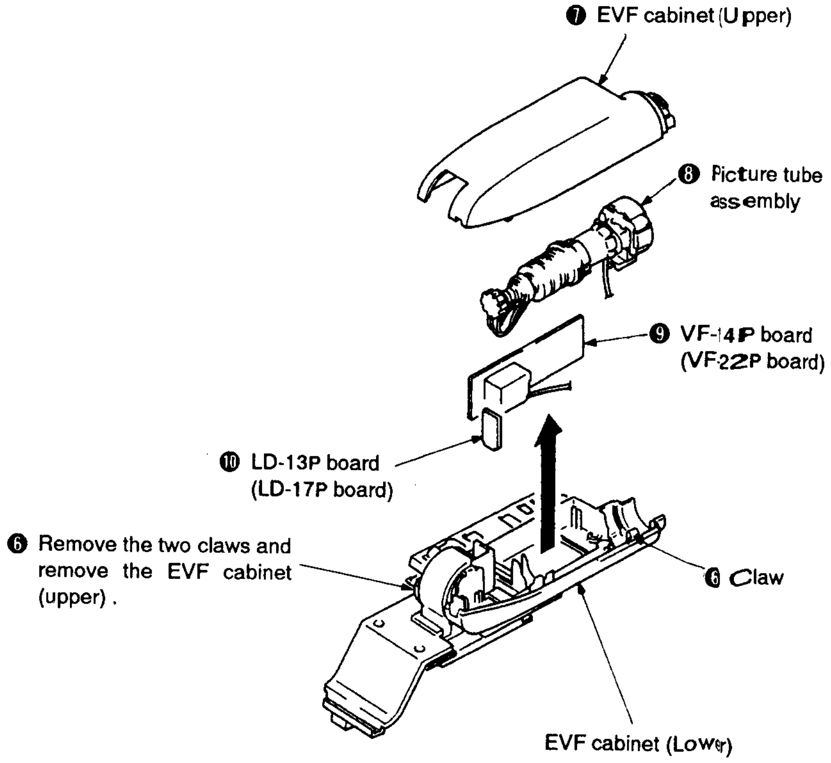

❶ One screw
(P2×4)
❸ One screw
(P2×4)
❽ L/R blind
❾ Connector
CN951 13P
RC-29P board
❻ One screw
(PTP2×6)
❹ One screw
(P2×4)
❷ One screw
(P2×4)
❼ Cabinet (Left) assembly
❺ One screw
(P2×4)
❿ Connector
CN902 2P
CV-9 board

2-5. REMOVAL OF MICROPHONE

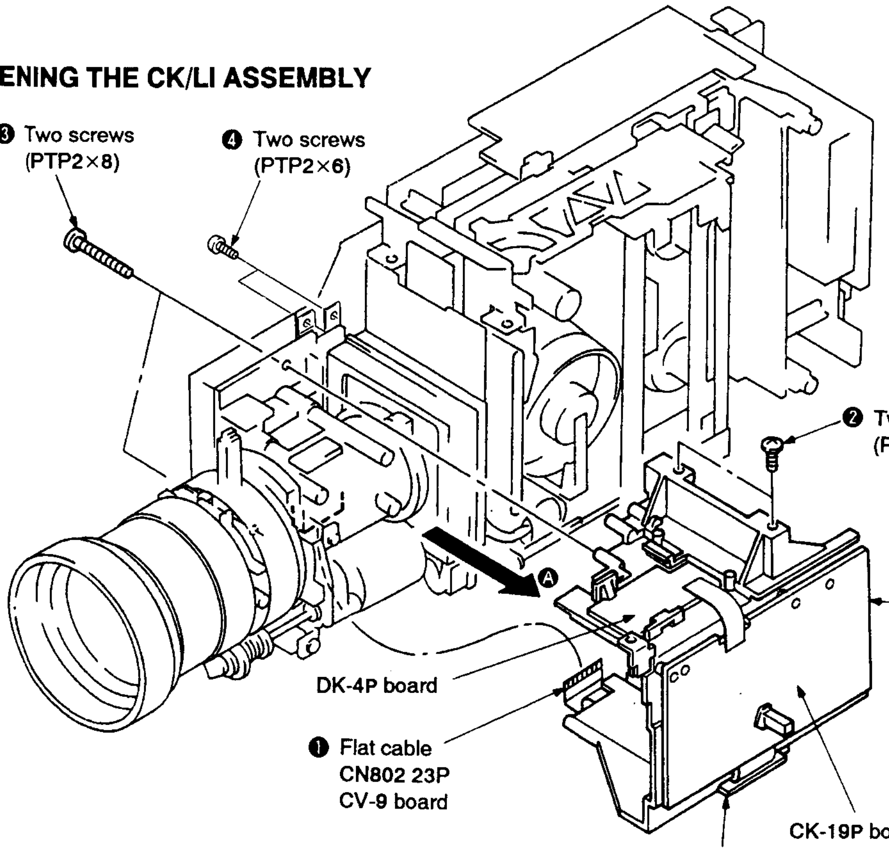

❹ One screw (K2×4)
❻ Microphone
❺ Microphone housing
❼ Connector CN452 3P
❸ One screw (PTP2×8)
❷ MA-37P board
❶ One screw (PTP2×8)

2-6. REMOVAL OF CABINET (UPPER) ASSEMBLY AND EVF


❹ Remove the finder holder block assembly in the direction of arrow.
❺ Three screws (PTP2×8)
❷ Cabinet (Upper) assembly
❶ Remove the claw in the direction of arrow.
❸ Connector CN901 4P CV-9 board


❼ EVF cabinet (Upper)
❽ Picture tube assembly
❾ VF-14P board (VF-22P board)
❿ LD-13P board (LD-17P board)
❻ Remove the two claws and remove the EVF cabinet (upper).
❻ Claw
EVF cabinet (Lower)

2-7. OPENING THE CK/LI ASSEMBLY



❸ Two screws
(PTP2×8)

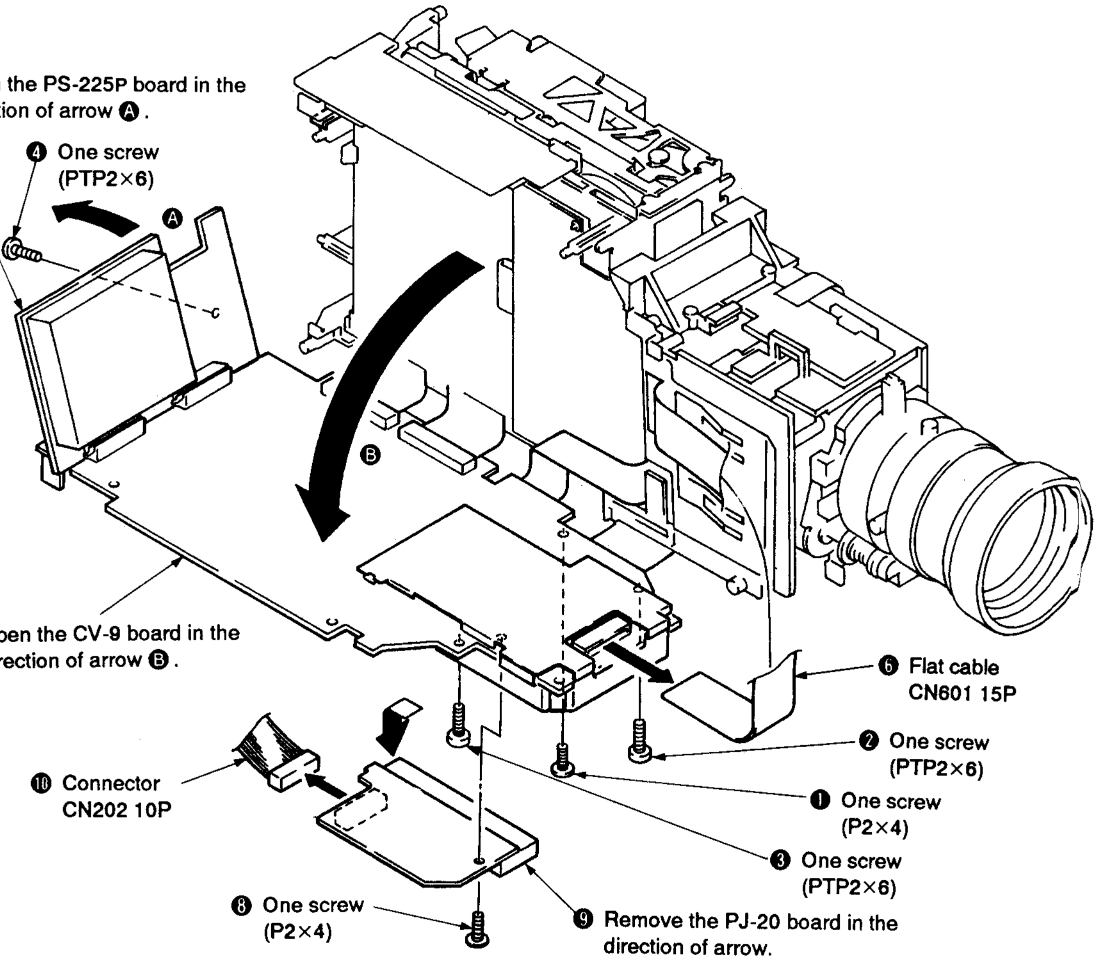
❹ Two screws
(PTP2×6)

❷ Two screws
(P2×4)

❺ Open the CK/L I
assembly in the direction of arrow

❶ Flat cable
CN802 23P
CV-9 board

2-8. OPENING THE PS-225P AND CV-9 BOARDS, AND REMOVAL OF PJ-20 BOARD



❺ Open the PS-225P board in the
direction of arrow Ⓐ.

❹ One screw
(PTP2×6)

❼ Open the CV-9 board in the
direction of arrow Ⓑ.

❻ Flat cable
CN601 15P

❷ One screw
(PTP2×6)

❶ One screw
(P2×4)

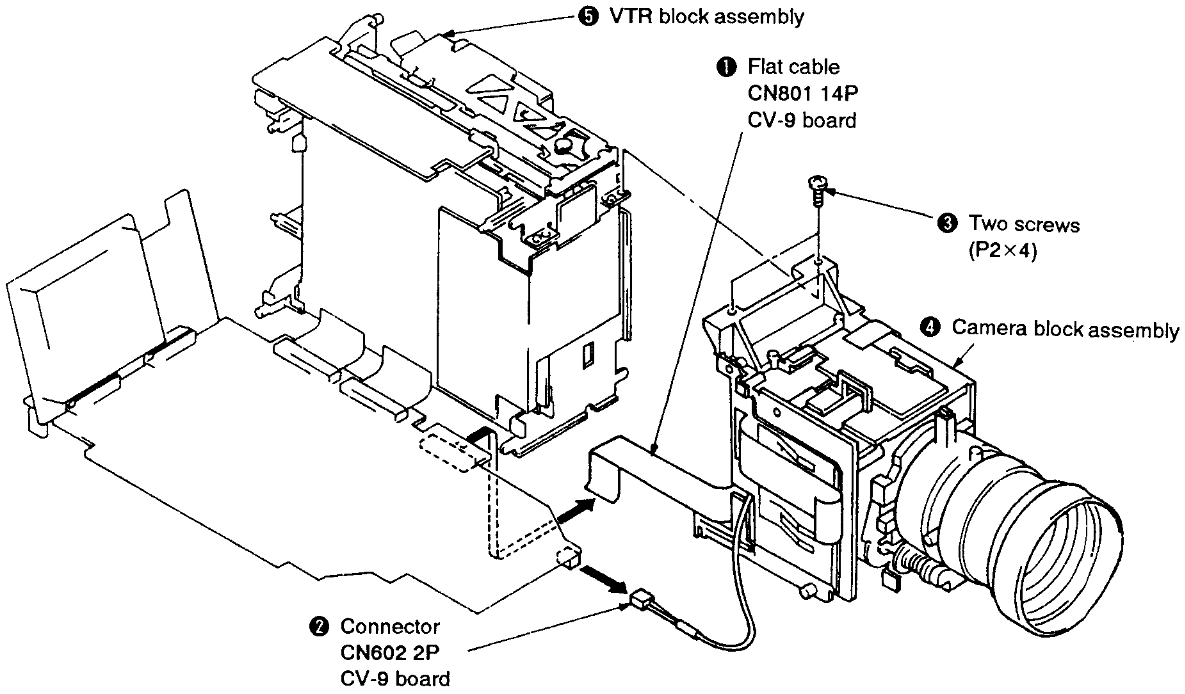
❸ One screw
(PTP2×6)

❿ Connector
CN202 10P

❽ One screw
(P2×4)

❾ Remove the PJ-20 board in the
direction of arrow.

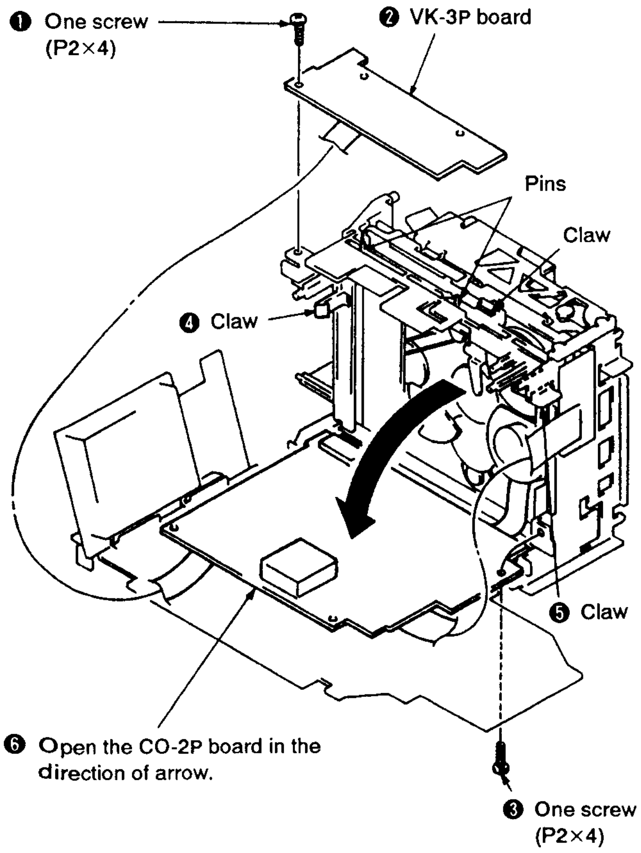
2-9. SEPARATING THE CAMERA AND VTR BLOCKS


⑤ VTR block assembly
① Flat cable
CN801 14P
CV-9 board
③ Two screws
(P2×4)
④ Camera block assembly
② Connector
CN602 2P
CV-9 board

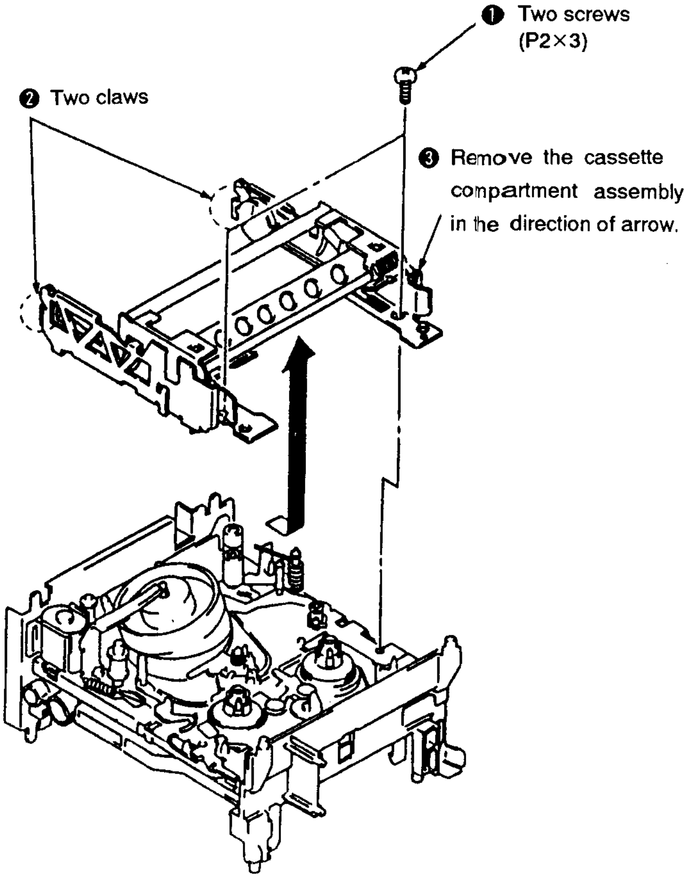
2-10. OPENING THE CO-2P AND VK-3P BOARDS

Notes: 1) Pay attention to two pins and a claw when removing the VK-3 board.

2) Care for the FE shield which is adhered to the RP amplifier shield case with a double coated tape.

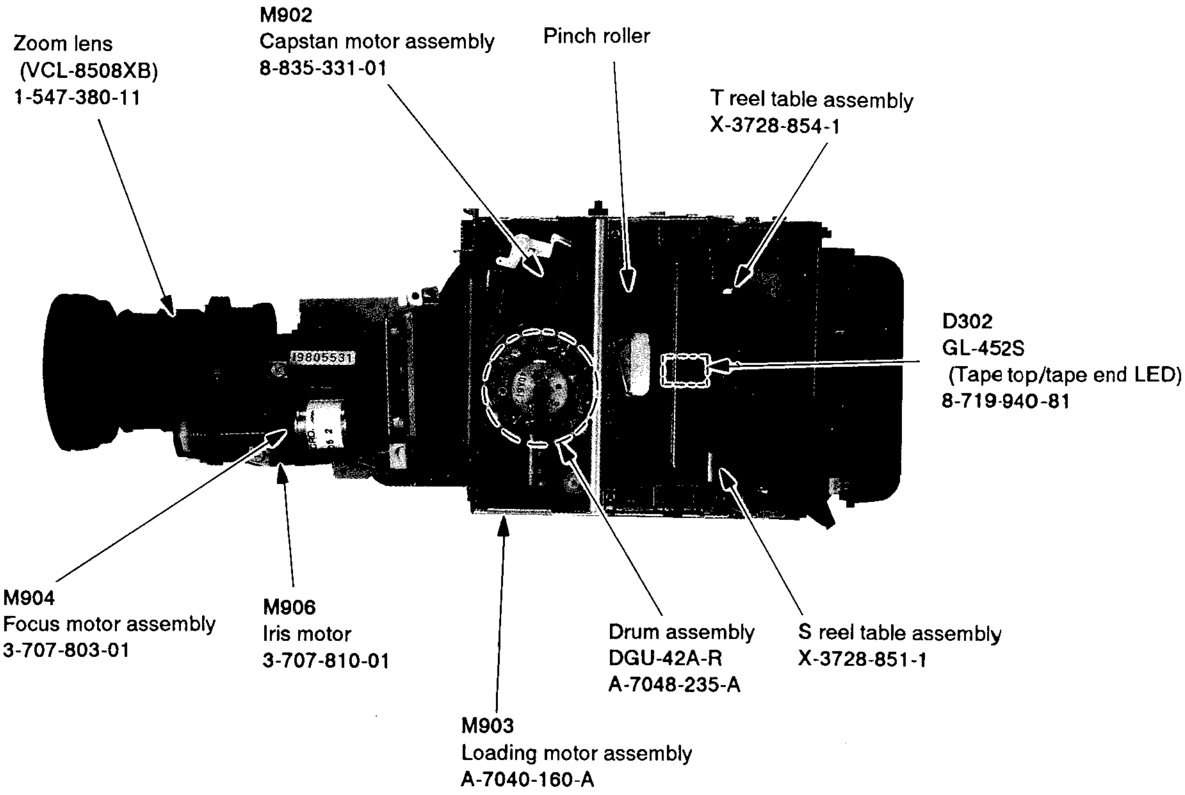

① One screw
(P2×4)
② VK-3P board
Pins
Claw
④ Claw
⑤ Claw
⑥ Open the CO-2P board in the direction of arrow.
③ One screw
(P2×4)

2-11. REMOVAL OF CASSETTE COMPARTMENT ASSEMBLY

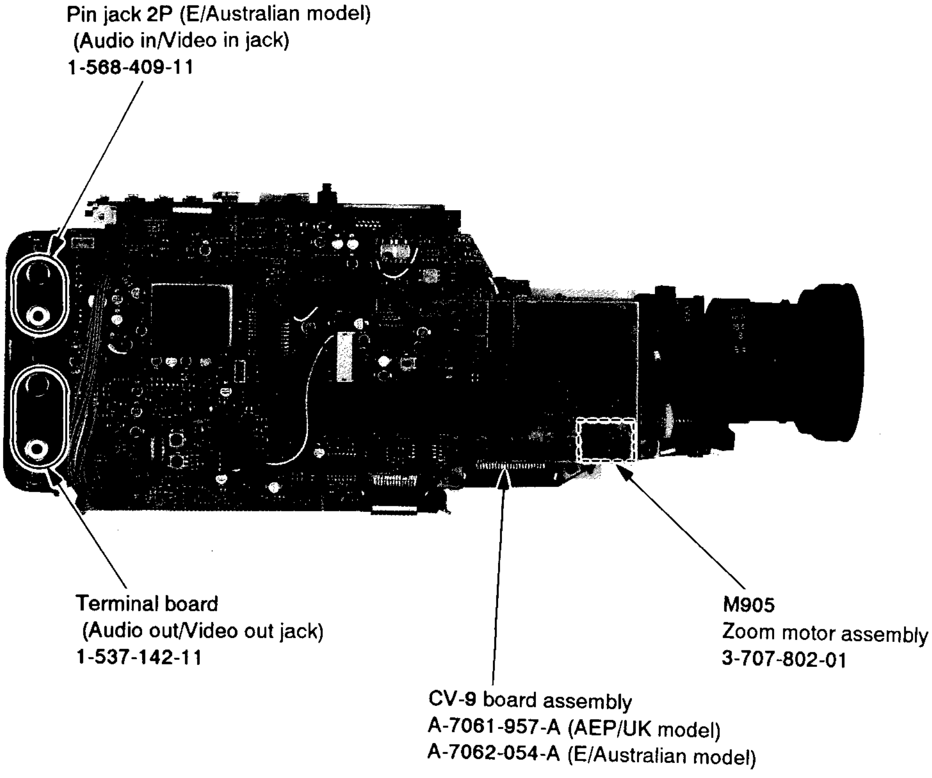

① Two screws
(P2×3)
② Two claws
③ Remove the cassette compartment assembly in the direction of arrow.

2-12. INTERNAL VIEW

– Right Side –

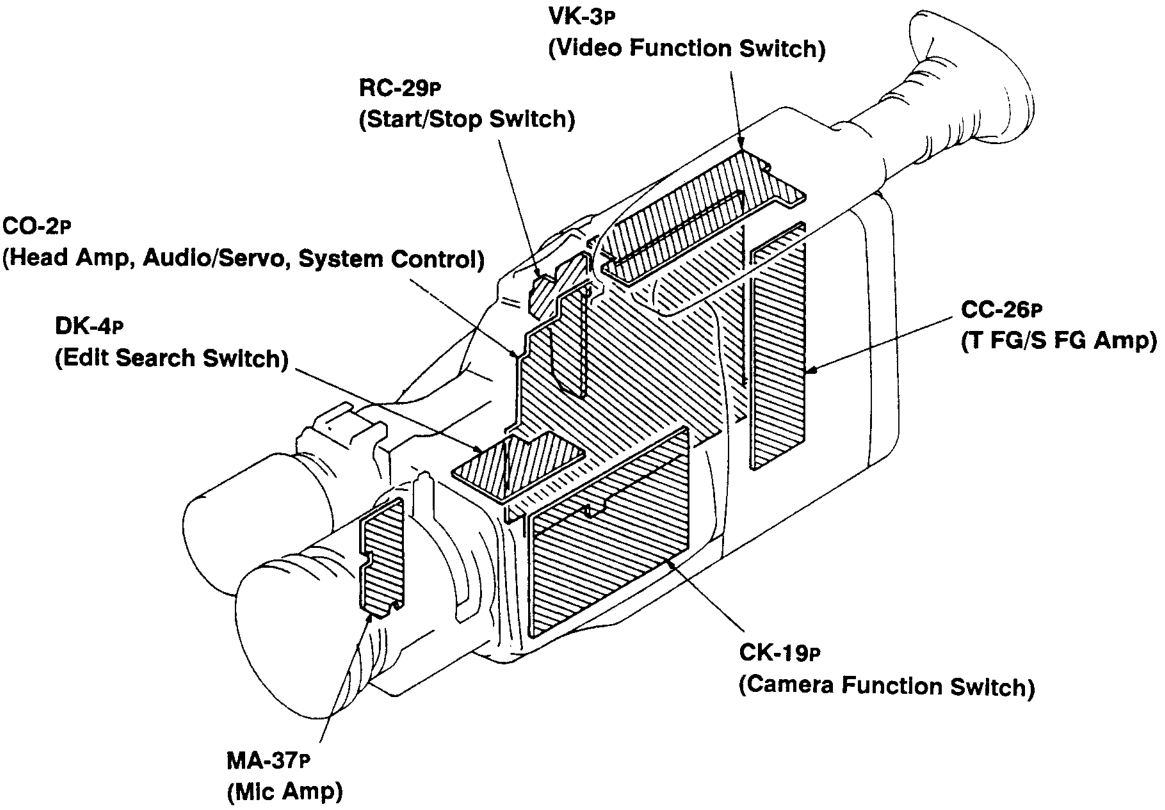

Zoom lens
(VCL-8508XB)
1-547-380-11
M902
Capstan motor assembly
8-835-331-01
Pinch roller
T reel table assembly
X-3728-854-1
D302
GL-452S
(Tape top/tape end LED)
8-719-940-81
M904
Focus motor assembly
3-707-803-01
M906
Iris motor
3-707-810-01
Drum assembly
DGU-42A-R
A-7048-235-A
S reel table assembly
X-3728-851-1
M903
Loading motor assembly
A-7040-160-A

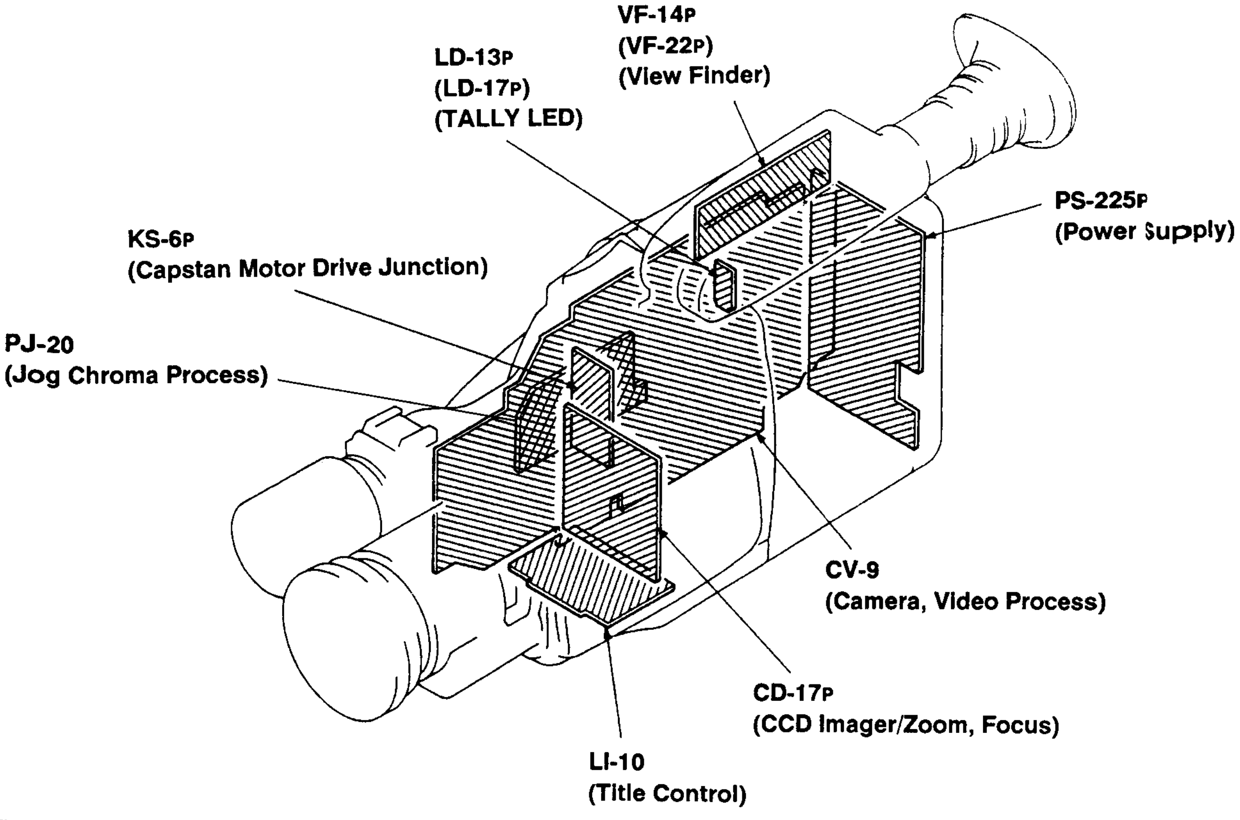
– Left Side –


Pin jack 2P (E/Australian model)
(Audio in/Video in jack)
1-568-409-11
Terminal board
(Audio out/Video out jack)
1-537-142-11
M905
Zoom motor assembly
3-707-802-01
CV-9 board assembly
A-7061-957-A (AEP/UK model)
A-7062-054-A (E/Australian model)

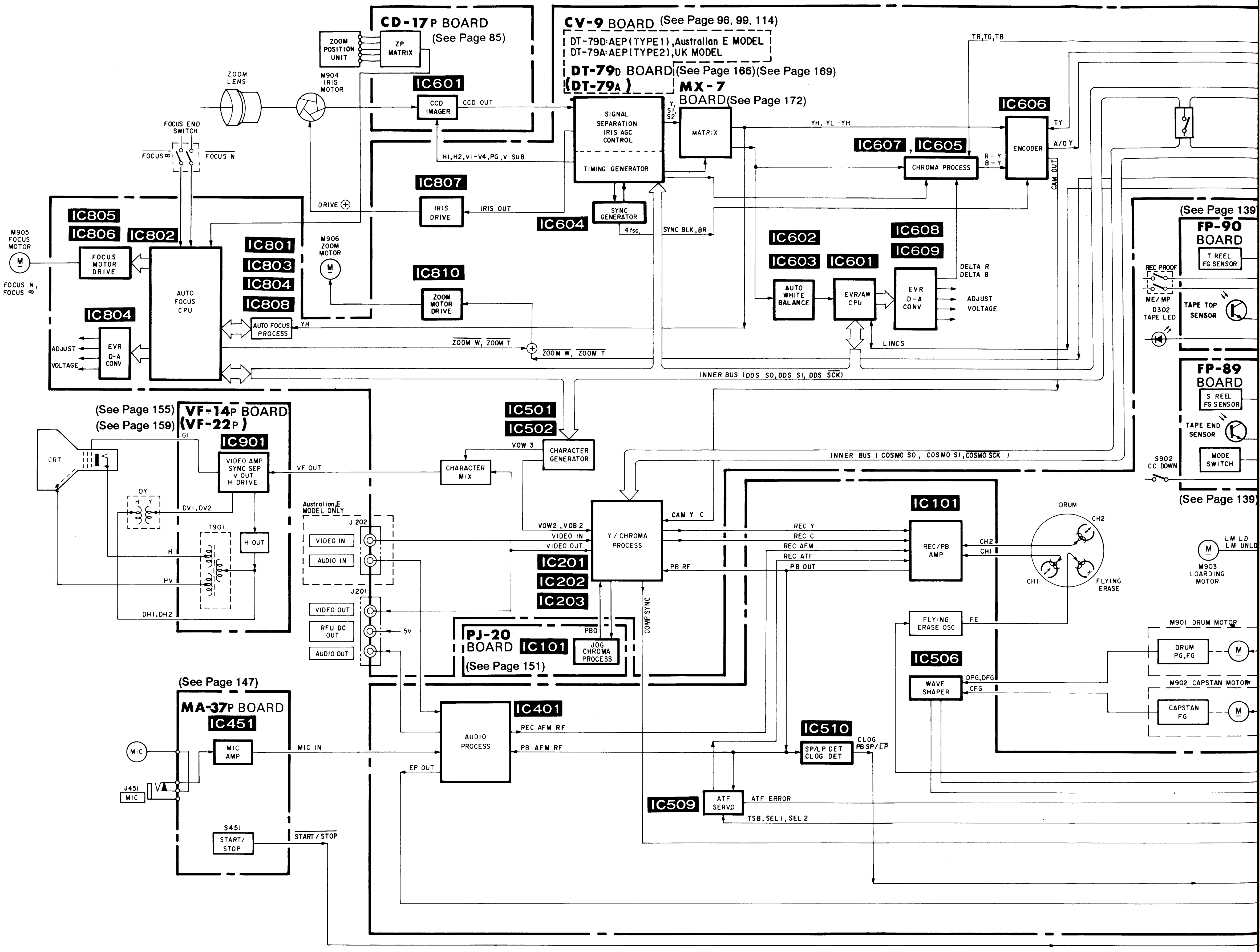
SECTION 3
DIAGRAMS

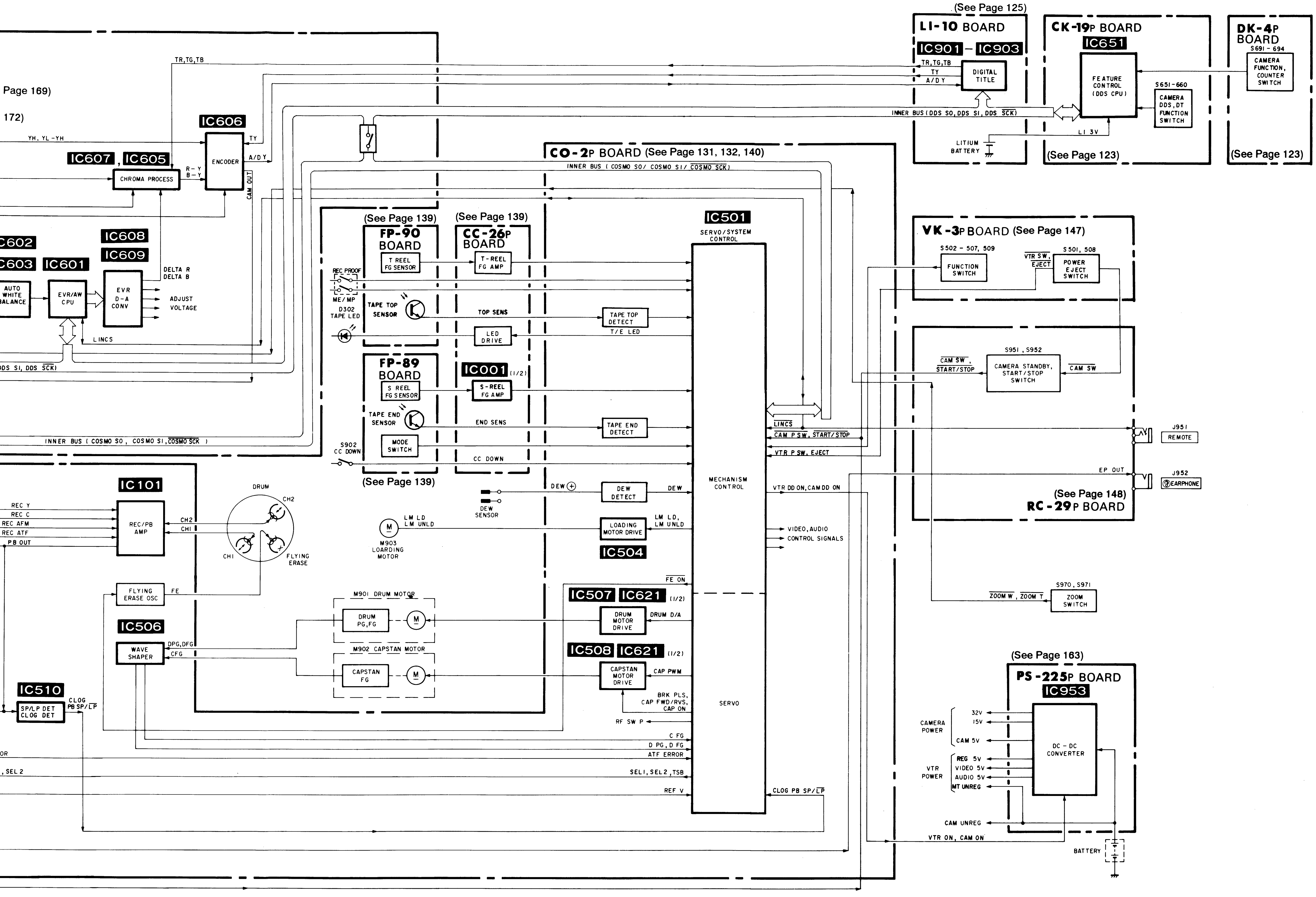
3-1. CIRCUIT BOARDS LOCATION


VK-3P
(Video Function Switch)
RC-29P
(Start/Stop Switch)
CO-2P
(Head Amp, Audio/Servo, System Control)
DK-4P
(Edit Search Switch)
CC-26P
(T FG/S FG Amp)
CK-19P
(Camera Function Switch)
MA-37P
(Mic Amp)

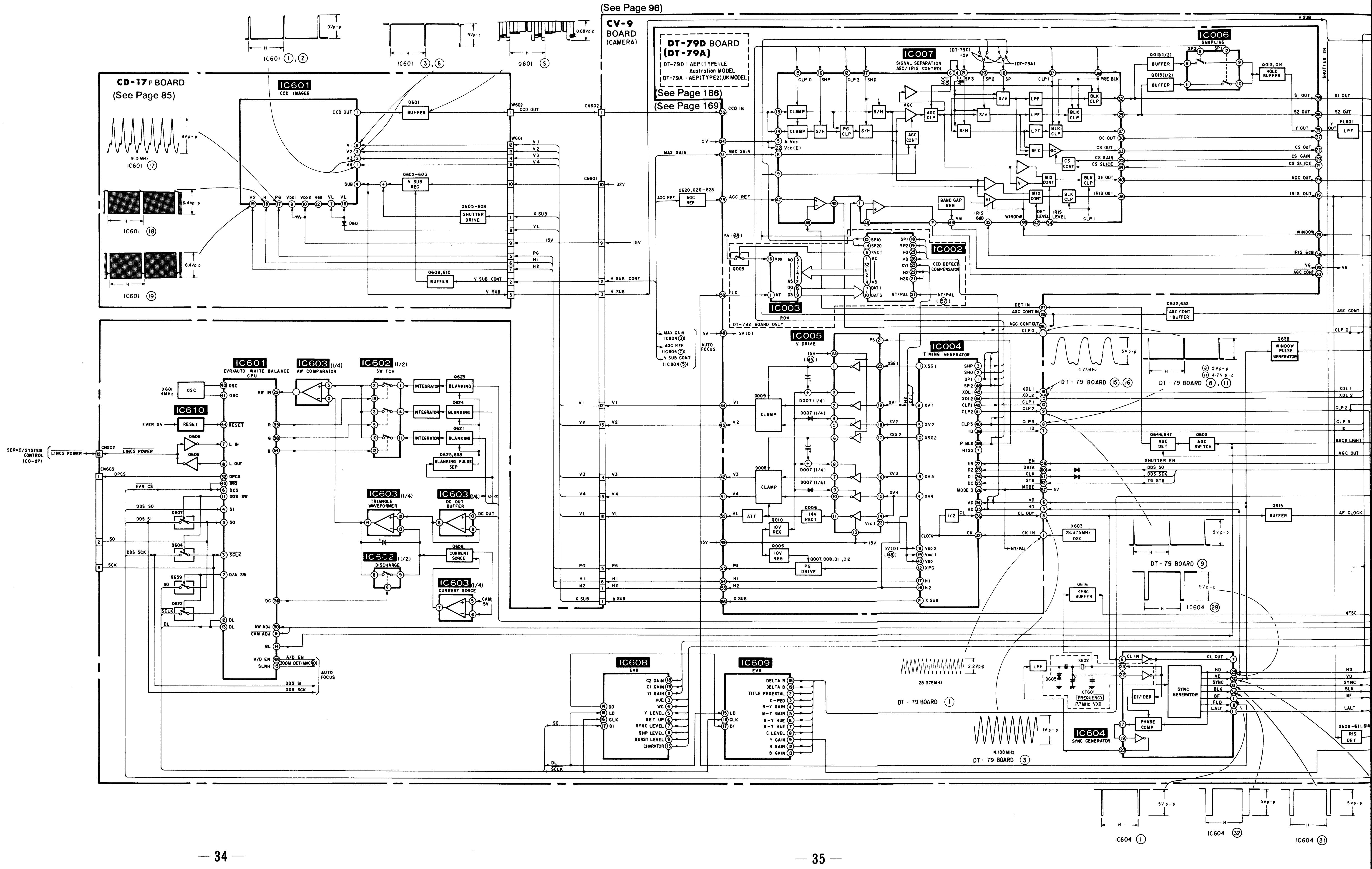

VF-14P
(VF-22P)
(View Finder)
LD-13P
(LD-17P)
(TALLY LED)
PS-225P
(Power Supply)
KS-6P
(Capstan Motor Drive Junction)
PJ-20
(Jog Chroma Process)
CV-9
(Camera, Video Process)
CD-17P
(CCD Imager/Zoom, Focus)
LI-10
(Title Control)

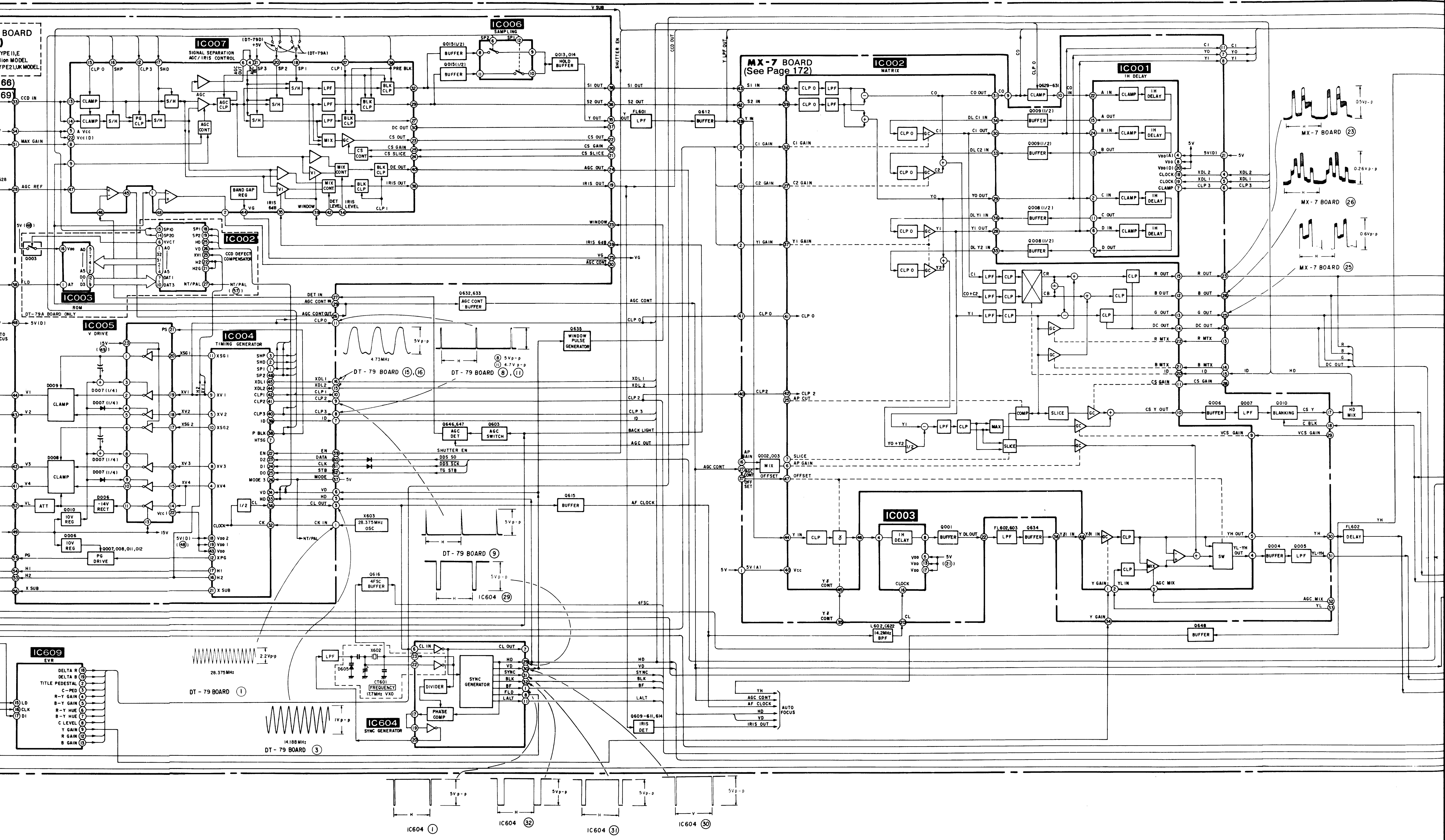
3-2. OVERALL BLOCK DIAGRAM

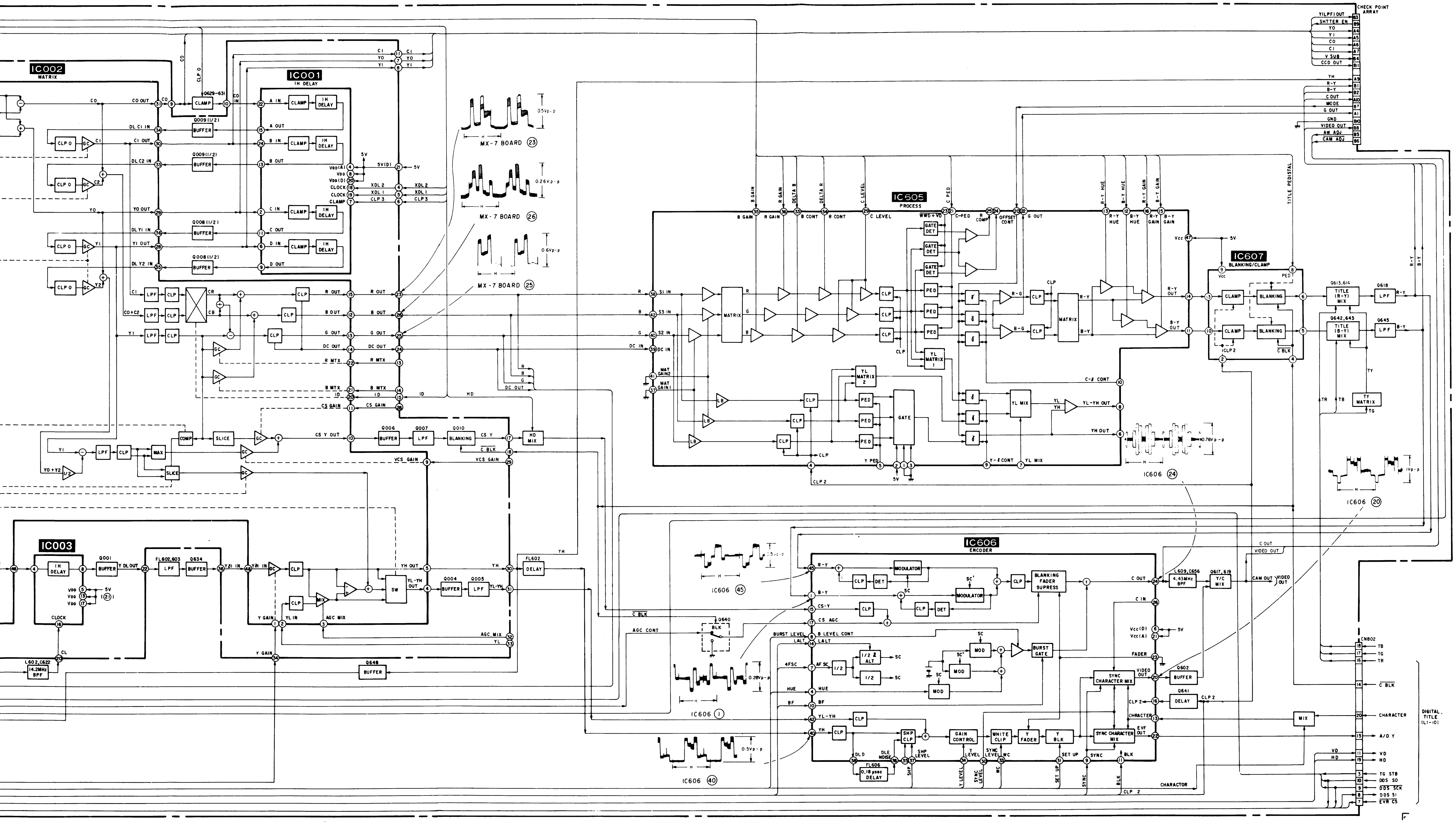

CD-17P BOARD
(See Page 85)
ZOOM POSITION UNIT
ZP MATRIX
ZOOM LENS
M904 IRIS MOTOR
IC601
CCD IMAGER
CCD OUT
FOCUS END SWITCH
FOCUS ∞
FOCUS N
H1,H2,V1-V4,PG,V SUB
IC807
IRIS DRIVE
IRIS OUT
DRIVE ⊕
IC805
IC806
IC802
M905 FOCUS MOTOR
FOCUS N, FOCUS ∞
FOCUS MOTOR DRIVE
AUTO FOCUS CPU
IC801
IC803
IC804
IC808
AUTO FOCUS PROCESS
YH
M906 ZOOM MOTOR
IC810
ZOOM MOTOR DRIVE
ZOOM W, ZOOM T
IC804
EVR D-A CONV
ADJUST
VOLTAGE
CV-9 BOARD (See Page 96, 99, 114)
DT-79D:AEP(TYPE1),Australian E MODEL
DT-79A:AEP(TYPE2),UK MODEL
DT-79D BOARD (See Page 166)(See Page 169)
(DT-79A)
MX-7 BOARD (See Page 172)
SIGNAL SEPARATION IRIS AGC CONTROL
TIMING GENERATOR
Y, S1, S2
MATRIX
YH, YL-YH
SYNC GENERATOR
IC604
4fsc
SYNC BLK,BR
TR,TG,TB
IC606
ENCODER
TY
A/DY
CAM OUT
IC607 , IC605
CHROMA PROCESS
R-Y
B-Y
IC602
IC603
IC601
AUTO WHITE BALANCE
EVR/AW CPU
IC608
IC609
EVR D-A CONV
DELTA R
DELTA B
ADJUST VOLTAGE
LINCS
INNER BUS (DDS SO,DDS SI, DDS SCK)
(See Page 139)
FP-90 BOARD
T REEL FG SENSOR
REC PROOF
ME/MP
D302 TAPE LED
TAPE TOP SENSOR
FP-89 BOARD
S REEL FG SENSOR
TAPE END SENSOR
S902 CC DOWN
MODE SWITCH
(See Page 139)
(See Page 155) VF-14P BOARD
(See Page 159) (VF-22P)
G1
IC901
VIDEO AMP SYNC SEP V OUT H DRIVE
VF OUT
CRT
DY
H Y
DV1,DV2
T901
H OUT
H
HV
DH1,DH2
IC501
IC502
VOW 3
CHARACTER GENERATOR
CHARACTER MIX
INNER BUS (COSMO SO, COSMO SI,COSMO SCK)
Australian E MODEL ONLY
J202
VIDEO IN
AUDIO IN
J201
VIDEO OUT
RFU DC OUT
AUDIO OUT
5V
VOW2,VOB2
VIDEO IN
VIDEO OUT
Y/CHROMA PROCESS
CAM Y C
IC201
IC202
IC203
PB RF
COMP SYNC
PJ-20 BOARD
IC101
(See Page 151)
PBO
JOG CHROMA PROCESS
IC101
REC Y
REC C
REC AFM
REC ATF
PB OUT
REC/PB AMP
CH2
CH1
DRUM
CH2
CH1
FLYING ERASE
FLYING ERASE OSC
FE
LM LD
LM UNLD
M903 LOARDING MOTOR
M901 DRUM MOTOR
DRUM PG,FG
M902 CAPSTAN MOTOR
CAPSTAN FG
IC506
WAVE SHAPER
DPG,DFG
CFG
(See Page 147)
MA-37P BOARD
IC451
MIC
MIC AMP
MIC IN
J451 MIC
S451
START/STOP
START/STOP
IC401
AUDIO PROCESS
REC AFM RF
PB AFM RF
EP OUT
IC510
SP/LP DET CLOG DET
CLOG
PB SP/LP
IC509
ATF SERVO
ATF ERROR
TSB,SEL1,SEL2


Page 169)
172)
TR,TG,TB
YH, YL -YH
IC606
ENCODER
TY
A/D Y
CAM OUT
IC607 , IC605
CHROMA PROCESS
R - Y
B - Y
IC602
IC603
IC601
IC608
IC609
AUTO WHITE BALANCE
EVR/AW CPU
EVR D-A CONV
DELTA R
DELTA B
ADJUST VOLTAGE
LINCS
DDS SI, DDS SCK)
INNER BUS (COSMO SO , COSMO SI, COSMO SCK)
(See Page 139)
FP-90 BOARD
T REEL FG SENSOR
REC PROOF
ME/MP
D302 TAPE LED
TAPE TOP SENSOR
(See Page 139)
CC-26P BOARD
T-REEL FG AMP
TOP SENS
LED DRIVE
FP-89 BOARD
S REEL FG SENSOR
TAPE END SENSOR
MODE SWITCH
S902 CC DOWN
IC001 (1/2)
S-REEL FG AMP
END SENS
CC DOWN
(See Page 139)
CO-2P BOARD (See Page 131, 132, 140)
INNER BUS (COSMO SO/ COSMO SI/ COSMO SCK)
IC501
SERVO/SYSTEM CONTROL
TAPE TOP DETECT
T/E LED
TAPE END DETECT
MECHANISM CONTROL
SERVO
DEW ⊕
DEW SENSOR
DEW DETECT
DEW
M903 LOADING MOTOR
LM LD
LM UNLD
LOADING MOTOR DRIVE
IC504
FE ON
IC507 IC621 (1/2)
DRUM MOTOR DRIVE
DRUM D/A
IC508 IC621 (1/2)
CAPSTAN MOTOR DRIVE
CAP PWM
BRK PLS, CAP FWD/RVS, CAP ON
RF SW P
C FG
D PG, D FG
ATF ERROR
SEL1, SEL2 ,TSB
REF V
CLOG PB SP/LP
LINCS
CAM P SW, START/STOP
VTR P SW, EJECT
VTR DD ON,CAM DD ON
VIDEO, AUDIO CONTROL SIGNALS
IC101
REC Y
REC C
REC AFM
REC ATF
PB OUT
REC/PB AMP
CH2
CH1
DRUM
CH2
CH1
FLYING ERASE
FLYING ERASE OSC
FE
M901 DRUM MOTOR
DRUM PG,FG
M902 CAPSTAN MOTOR
CAPSTAN FG
IC506
WAVE SHAPER
DPG,DFG
CFG
IC510
SP/LP DET CLOG DET
CLOG PB SP/LP
OR
, SEL 2
(See Page 125)
LI-10 BOARD
IC901 - IC903
TR,TG,TB
TY
A/D Y
DIGITAL TITLE
INNER BUS (DDS SO, DDS SI, DDS SCK)
LITIUM BATTERY
CK-19P BOARD
IC651
FEATURE CONTROL (DDS CPU)
S651-660
CAMERA DDS, DT FUNCTION SWITCH
LI 3V
(See Page 123)
DK-4P BOARD
S691 - 694
CAMERA FUNCTION, COUNTER SWITCH
(See Page 123)
VK-3P BOARD (See Page 147)
S502 - 507, 509
FUNCTION SWITCH
VTR SW, EJECT
S501, 508
POWER EJECT SWITCH
S951 , S952
CAM SW , START/STOP
CAMERA STANDBY, START/STOP SWITCH
CAM SW
J951
REMOTE
EP OUT
J952
EARPHONE
(See Page 148)
RC-29P BOARD
S970 , S971
ZOOM W , ZOOM T
ZOOM SWITCH
(See Page 163)
PS-225P BOARD
IC953
CAMERA POWER
32V
15V
CAM 5V
VTR POWER
REG 5V
VIDEO 5V
AUDIO 5V
MT UNREG
DC - DC CONVERTER
CAM UNREG
VTR ON, CAM ON
BATTERY

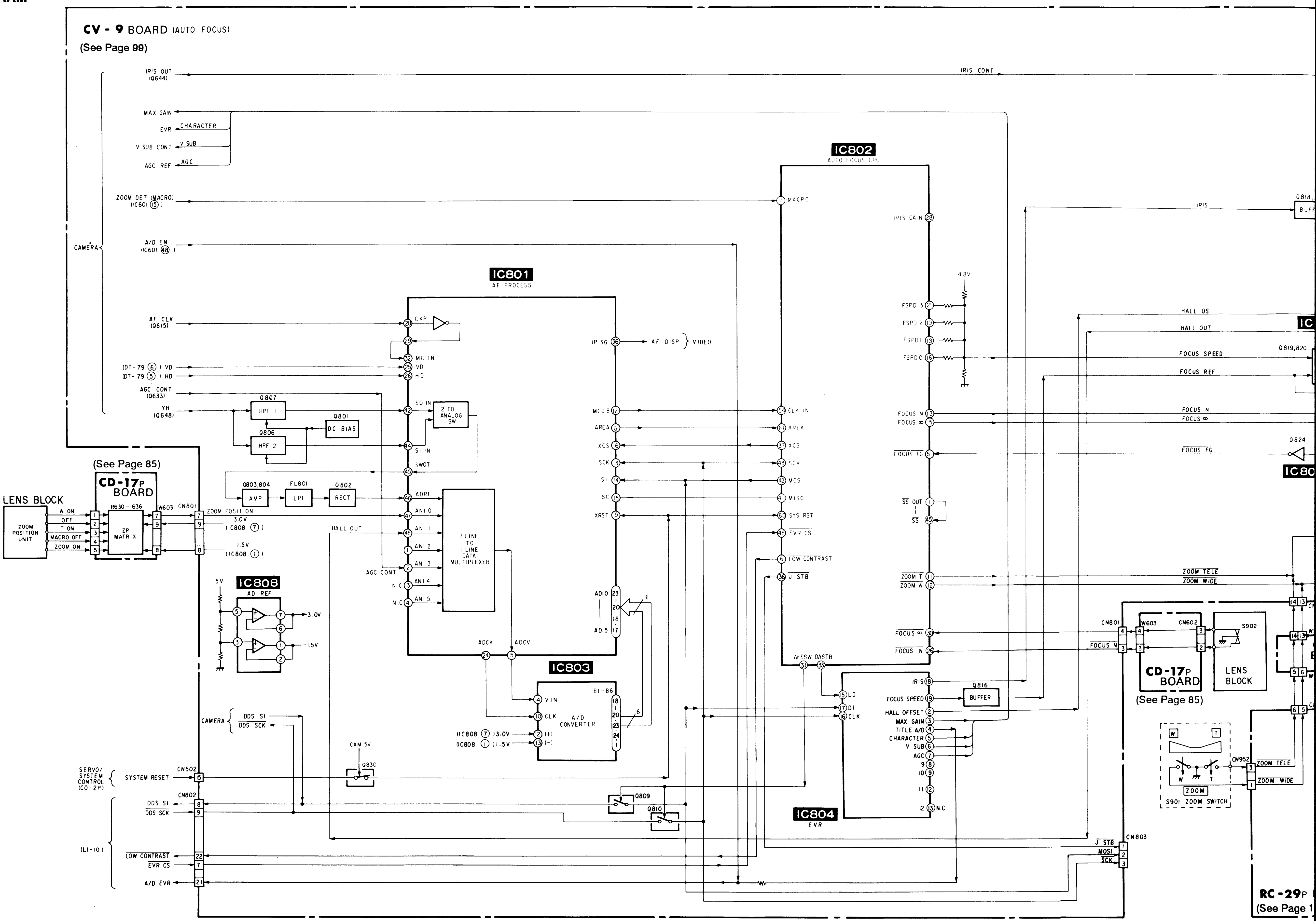
3-3. CAMERA BLOCK DIAGRAM

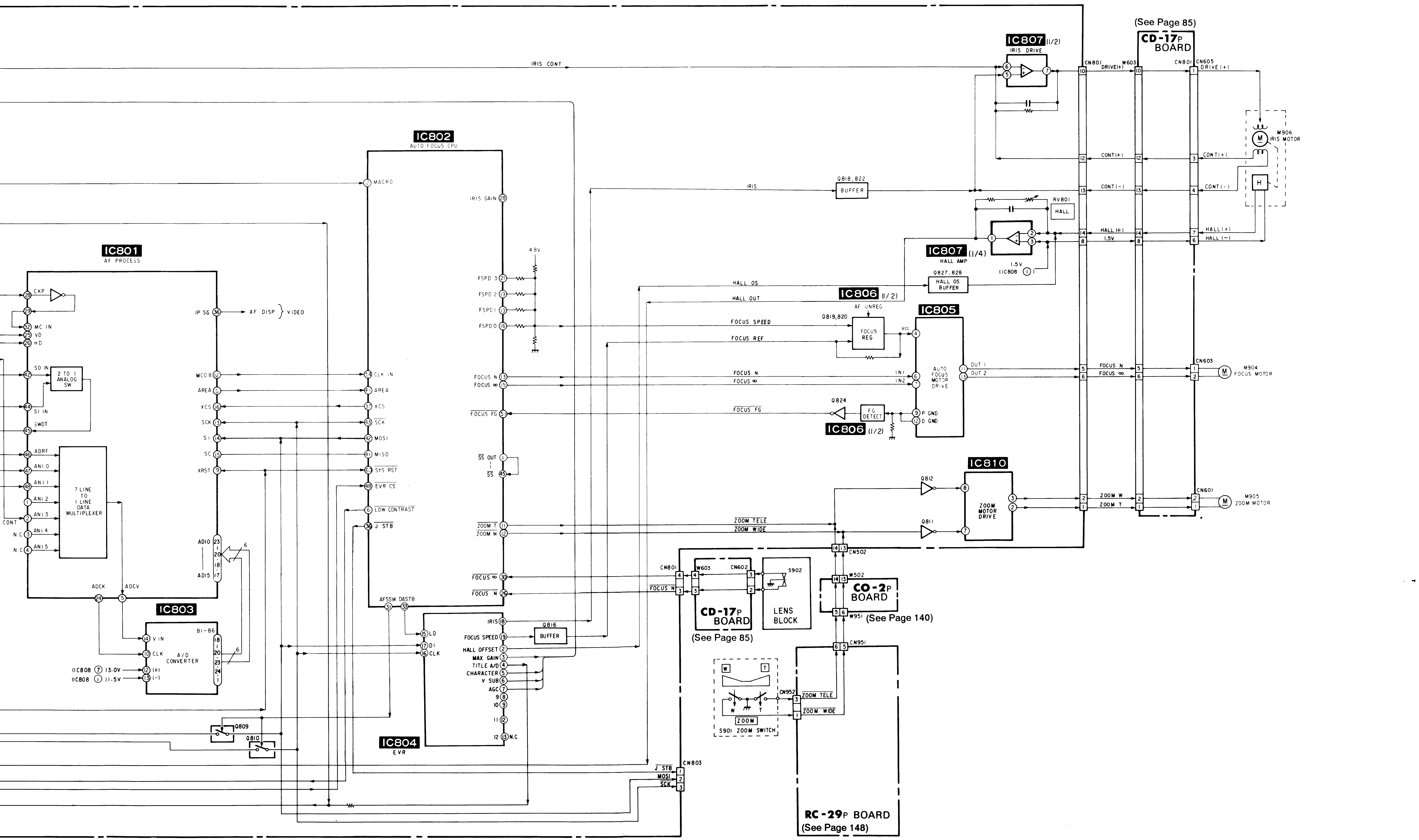

(See Page 96)
CV-9 BOARD (CAMERA)
DT-79D BOARD (DT-79A)
DT-79D : AEP(TYPE1),E Australian MODEL
DT-79A : AEP(TYPE2),UK MODEL
(See Page 166)
(See Page 169)
CD-17P BOARD
(See Page 85)
IC601 CCD IMAGER
IC601 ①,②
IC601 ③,⑥
Q601 ⑤
9.5MHz
IC601 ⑰
IC601 ⑱
IC601 ⑲
Q601 BUFFER
Q602-603 V SUB REG
Q605-608 SHUTTER DRIVE
Q609,610 BUFFER
CCD OUT
V SUB CONT
V SUB
X SUB
IC601 EVR/AUTO WHITE BALANCE CPU
IC603 (1/4) AW COMPARATOR
IC602 (1/2) SWITCH
INTEGRATOR
BLANKING
Q625,638 BLANKING PULSE SEP
IC610 RESET
X601 4MHz OSC
IC603 (1/4) TRIANGLE WAVEFORMER
IC603 (1/4) DC OUT BUFFER
IC602 (1/2) DISCHARGE
Q608 CURRENT SORCE
IC603 (1/4) CURRENT SORCE
SERVO/SYSTEM CONTROL (CO-2P)
LINCS POWER
CN502
CN603
DPCS
EVR CS
DDS SO
DDS SI
DDS SCK
SO
SCK
AW ADJ
CAM ADJ
A/D EN
ZOOM DET(MACRO)
AUTO FOCUS
IC607 SIGNAL SEPARATION AGC/IRIS CONTROL
IC006 SAMPLING
Q015(1/2) BUFFER
Q013,014 HOLD BUFFER
CLAMP
S/H
PG CLP
AGC
AGC CLP
AGC CONT
LPF
BLK CLP
MIX
CS CONT
MIX CONT
BAND GAP REG
IC002 CCD DEFECT COMPENSATOR
IC003 ROM
DT-79A BOARD ONLY
Q003
Q620,626-628 AGC REF
MAX GAIN
AGC REF
S1 OUT
S2 OUT
Y OUT
FL601 LPF
DC OUT
CS OUT
CS GAIN
CS SLICE
AGC OUT
IRIS OUT
WINDOW
IRIS 6dB
VG
AGC CONT
SHUTTER EN
V SUB
Q632,633 AGC CONT BUFFER
Q635 WINDOW PULSE GENERATOR
IC005 V DRIVE
IC004 TIMING GENERATOR
D009 CLAMP
D008 CLAMP
D007 (1/4)
ATT
Q010 10V REG
D006 -14V RECT
Q006 10V REG
Q007,008,011,012 PG DRIVE
4.73MHz
DT-79 BOARD ⑮,⑯
DT-79 BOARD ⑧,⑪
DT-79 BOARD ⑨
Q646,647 AGC DET
Q603 AGC SWITCH
X603 28.375MHz OSC
Q615 BUFFER
Q616 4FSC BUFFER
IC604 ㉙
IC608 EVR
IC609 EVR
28.375MHz
DT-79 BOARD ①
14.188MHz
DT-79 BOARD ③
X602
D605
CT601 FREQUENCY
17.7MHz VXO
IC604 SYNC GENERATOR
DIVIDER
PHASE COMP
SYNC GENERATOR
Q609-611,614 IRIS DET
IC604 ①
IC604 ㉜
IC604 ㉛
AF CLOCK
4FSC
HD
VD
SYNC
BLK
BF
LALT
BACK LIGHT
CLP O
XDL 1
XDL 2
CLP 2
CLP 3
ID


BOARD
MODEL
UK MODEL
CCD IN
MAX GAIN
AGC REF
5V (D)
FLD
DT-79A BOARD ONLY
IC007
SIGNAL SEPARATION AGC/IRIS CONTROL
(DT-79D) +5V
(DT-79A)
CLP 0
SHP
CLP 3
SHD
SP 3
SP 2
SP 1
CLP 1
PRE BLK
CLAMP
S/H
PG CLP
AGC
AGC CLP
AGC CONT
LPF
BLK CLP
MIX
GC
CS CONT
MIX CONT
DET LEVEL
IRIS LEVEL
WINDOW
IRIS 64B
BAND GAP REG
VG
IC006
SAMPLING
Q015(1/2) BUFFER
Q013, 014 HOLD BUFFER
S1 OUT
S2 OUT
Y OUT
DC OUT
CS OUT
CS GAIN
CS SLICE
DE OUT
AGC OUT
IRIS OUT
IRIS 64B
AGC CONT
V SUB
SHUTTER EN
IC002
CCD DEFECT COMPENSATOR
NT/PAL
IC003
ROM
IC005
V DRIVE
Q009
Q008
CLAMP
D007 (1/4)
ATT
Q010 10V REG
D006 -14V RECT
Q006 10V REG
Q007, 008, 011, 012
PG DRIVE
15V
IC004
TIMING GENERATOR
XSG 1
XV 1
XV 2
XSG 2
XV 3
XV 4
SHP
SHD
SP1
SP2
XDL1
XDL2
CLP1
CLP2
CLP3
P BLK
HTSG
EN
DATA
CLK
STB
MODE
VD
HD
CL OUT
CK IN
1/2
X603 28.375MHz OSC
DET IN
AGC CONT IN
AGC CONT OUT
CLP 0
4.73MHz
DT-79 BOARD (15), (16)
DT-79 BOARD (8), (11)
Q632, 633 AGC CONT BUFFER
Q635 WINDOW PULSE GENERATOR
Q646, 647 AGC DET
Q603 AGC SWITCH
SHUTTER EN
DDS SO
DDS SCK
TG STB
Q615 BUFFER
DT-79 BOARD (9)
IC604 (29)
Q616 4FSC BUFFER
4FSC
IC609
EVR
DELTA R
DELTA B
TITLE PEDESTAL
C-PED
R-Y GAIN
B-Y GAIN
R-Y HUE
B-Y HUE
C LEVEL
Y GAIN
R GAIN
B GAIN
LD
CLK
DI
28.375MHz
DT-79 BOARD (1)
14.188MHz
DT-79 BOARD (3)
2.2Vp-p
1Vp-p
LPF
D605
X602
CT601 FREQUENCY 17.7MHz VXO
IC604
SYNC GENERATOR
CL IN
CL OUT
DIVIDER
PHASE COMP
HD
VD
SYNC
BLK
BF
FLD
LALT
Q609-611, 614 IRIS DET
YH
AGC CONT
AF CLOCK
IRIS OUT
AUTO FOCUS
IC604 (1)
IC604 (32)
IC604 (31)
IC604 (30)
5Vp-p
MX-7 BOARD
(See Page 172)
IC002
MATRIX
IC001
1H DELAY
S1 IN
S2 IN
Y IN
C1 GAIN
C2 GAIN
Y1 GAIN
CLP 0
CLP 2
AP CUT
AP GAIN
Q002, 003 MIX
SLICE
AGC CONT
OFFSET
CO OUT
DL C1 IN
C1 OUT
DL C2 IN
YO OUT
DL Y1 IN
Y1 OUT
DL Y2 IN
Q629-631 CLAMP
Q009 (1/2) BUFFER
Q008 (1/2) BUFFER
A IN
A OUT
B IN
B OUT
C IN
C OUT
D IN
D OUT
VDD (A)
VDD
VDD (D)
CLOCK
CLAMP
XDL 2
XDL 1
CLP 3
R OUT
B OUT
G OUT
DC OUT
R MTX
B MTX
ID
CS GAIN
CS Y OUT
VCS GAIN
COMP
SLICE
MAX
Q006 BUFFER
Q007 LPF
Q010 BLANKING
C BLK
HD MIX
IC003
1H DELAY
Q001 BUFFER
Y DL OUT
FL602, 603 LPF
Q634 BUFFER
Y GAIN
YL IN
AGC MIX
SW
YH OUT
YL-YH OUT
Q004 BUFFER
Q005 LPF
FL602 DELAY
Y γ CONT
L602, C622 14.2MHz BPF
Q648 BUFFER
MX-7 BOARD (23)
MX-7 BOARD (26)
MX-7 BOARD (25)
0.5Vp-p
0.26Vp-p
0.6Vp-p

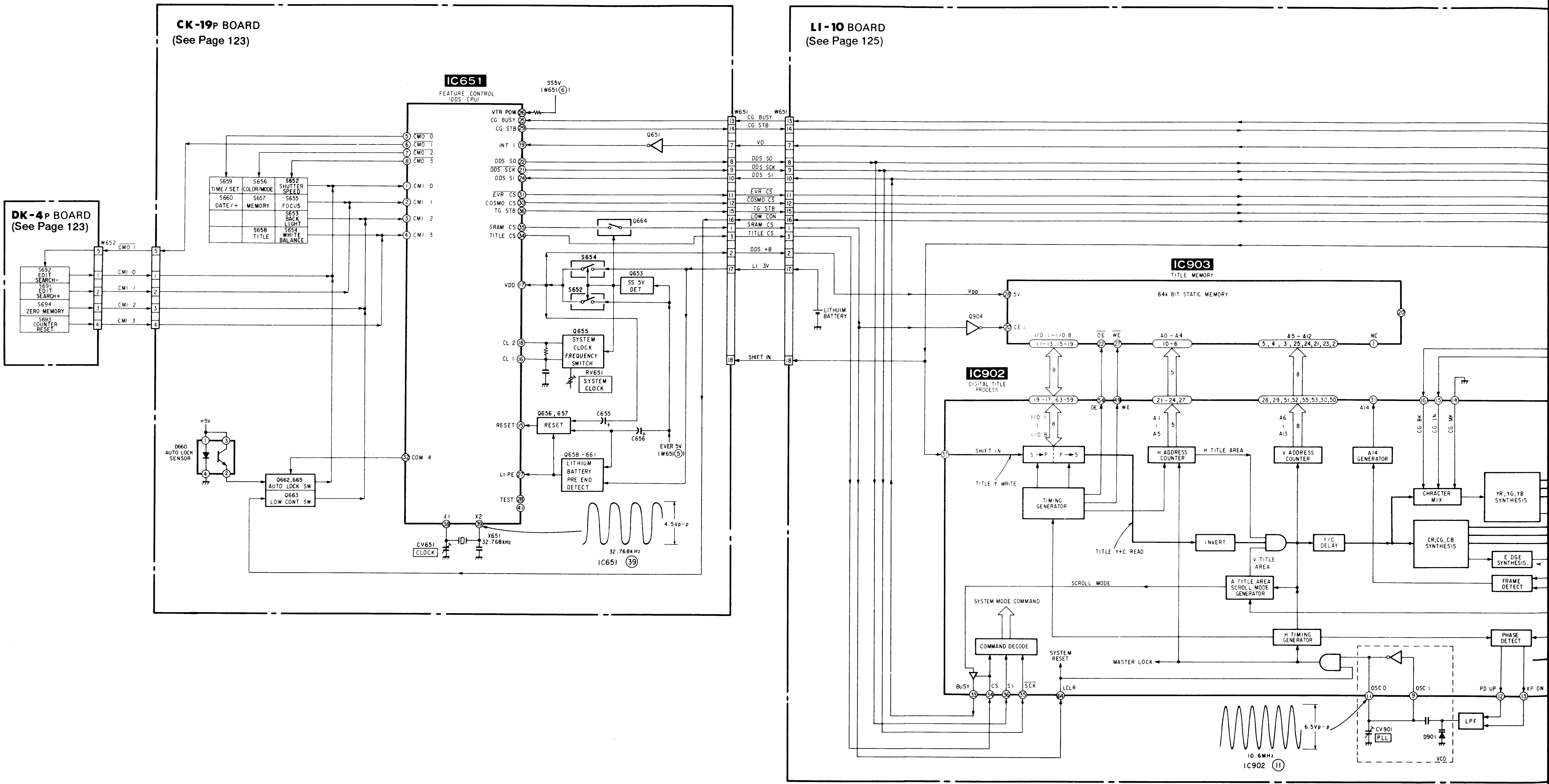

IC002
MATRIX
IC001
1H DELAY
IC003
IC605
PROCESS
IC606
ENCODER
IC607
BLANKING/CLAMP
CHECK POINT ARRAY
Y1(LPF) OUT
SHTTER EN
YO
Y1
CO
C1
V SUB
CCD OUT
YH
R-Y
B-Y
C OUT
MODE
G OUT
GND
VIDEO OUT
AW ADJ
CAM ADJ
CLAMP
BUFFER
1H DELAY
A IN
A OUT
B IN
B OUT
C IN
C OUT
D IN
D OUT
CO OUT
DL C1 IN
C1 OUT
DL C2 IN
YO OUT
DL Y1 IN
Y1 OUT
DL Y2 IN
Q009(1/2)
Q008(1/2)
Q629~631
XDL 2
XDL 1
CLP 3
5V(D)
CLP 0
GC
LPF
CLP
R OUT
B OUT
G OUT
DC OUT
R MTX
B MTX
ID
HD
CS GAIN
CS Y OUT
COMP
SLICE
MAX
VCS GAIN
Q006
Q007
Q010
BLANKING
CS Y
C BLK
HD MIX
MX-7 BOARD ㉓
0.5Vp-p
MX-7 BOARD ㉖
0.26Vp-p
MX-7 BOARD ㉕
0.6Vp-p
Q001
Y DL OUT
FL602,603
Q634
Y0 IN
YH OUT
YL-YH OUT
SW
MIX
Q004
Q005
FL602
DELAY
Y GAIN
YL IN
AGC MIX
L602,C622
14.2MHz BPF
CLOCK
Q648
B GAIN
R GAIN
DELTA B
DELTA R
C LEVEL
C PED
R COMP
OFFSET CONT
R-Y HUE
B-Y HUE
R-Y GAIN
B-Y GAIN
TITLE PEDESTAL
S1 IN
S3 IN
S2 IN
DC IN
MAT GAIN2
MAT GAIN1
MATRIX
GATE DET
PED
YL MATRIX 1
YL MATRIX 2
GATE
YL MIX
YL-YH OUT
YH OUT
C-γ CONT
Y-γ CONT
Y PED
CLP 2
IC606 ㉔
0.76Vp-p
IC606 ⑳
1Vp-p
Q613,614
TITLE (R-Y) MIX
Q642,643
TITLE (B-Y) MIX
Q618
Q645
TY MATRIX
IC606 ㊺
IC606 ①
0.28Vp-p
IC606 ㊵
0.5Vp-p
Q640
BLK
AGC CONT
MODULATOR
DET
BLANKING FADER SUPRESS
L609,C656
4.43MHz BPF
Q617,619
Y/C MIX
CAM OUT
VIDEO OUT
CS-Y
CS AGC
BURST LEVEL
B LEVEL CONT
LALT
4FSC
AF SC
1/2
1/2 & ALT
SC
MOD
BURST GATE
HUE
BF
YL-YH
YH
SHP CLP
GAIN CONTROL
WHITE CLIP
Y FADER
Y BLK
SYNC CHARACTER MIX
FADER
Q602
Q641
CLP 2
CHARACTER
EVF OUT
FL606
0.18μsec DELAY
DLD
DLE NOISE
SHP LEVEL
Y LEVEL
SYNC LEVEL
WC
SET UP
SYNC
CN802
TB
TG
TR
C BLK
CHARACTER
DIGITAL TITLE (L1-10)
A/D Y
VD
HD
TG STB
DDS SO
DDS SCK
DDS SI
EVR CS
CHARACTOR

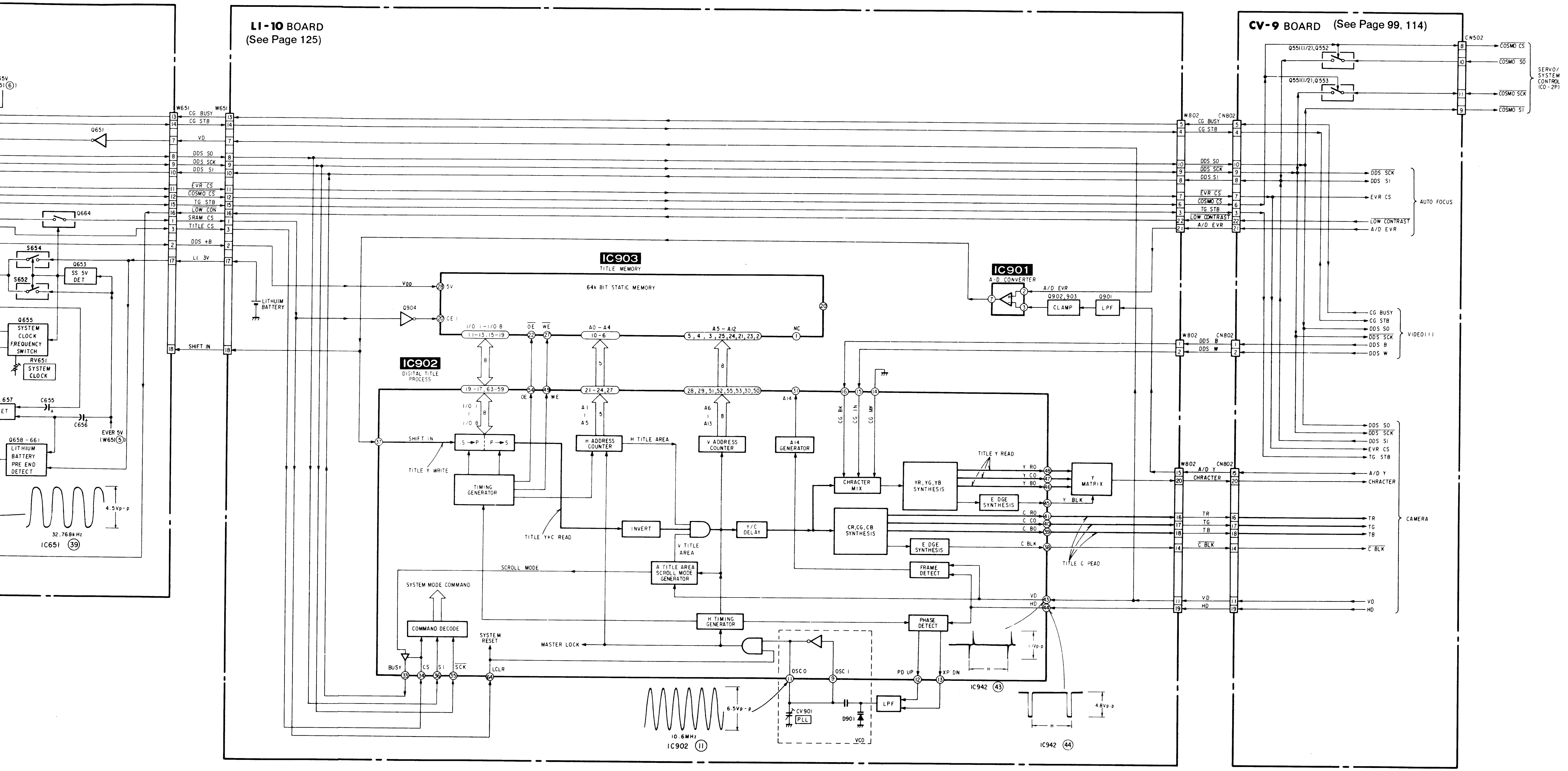
3-4. AUTO FOCUS BLOCK DIAGRAM


CV - 9 BOARD (AUTO FOCUS)
(See Page 99)
CAMERA
IRIS OUT (Q644)
IRIS CONT
MAX GAIN
EVR
CHARACTER
V SUB CONT
V SUB
AGC REF
AGC
ZOOM DET (MACRO) (IC601 ⑮)
A/D EN (IC601 ㊽)
IC801
AF PROCESS
AF CLK (Q615)
(DT-79 ⑥) VD
(DT-79 ⑤) HD
AGC CONT (Q633)
YH (Q648)
CKP
MC IN
VD
HD
SO IN
SI IN
SWOT
ADRF
ANI 0
ANI 1
ANI 2
ANI 3
ANI 4
ANI 5
N.C
AGC CONT
2 TO 1 ANALOG SW
7 LINE TO 1 LINE DATA MULTIPLEXER
IP SG
AF DISP
VIDEO
MCO 8
AREA
XCS
SCK
SI
SO
XRST
ADI0
ADI5
ADCK
ADCV
Q807
HPF 1
Q806
HPF 2
Q801
DC BIAS
Q803,804
AMP
FL801
LPF
Q802
RECT
IC802
AUTO FOCUS CPU
MACRO
IRIS GAIN
4.8V
FSPD 3
FSPD 2
FSPD 1
FSPD 0
FOCUS N
FOCUS ∞
FOCUS FG
SS OUT
SS
CLK IN
AREA
XCS
SCK
MOSI
MISO
SYS RST
EVR CS
LOW CONTRAST
J STB
ZOOM T
ZOOM W
AFSSW DASTB
IRIS
Q818
BUFF
HALL OS
HALL OUT
FOCUS SPEED
FOCUS REF
Q819,820
FOCUS N
FOCUS ∞
Q824
FOCUS FG
ZOOM TELE
ZOOM WIDE
IC80
LENS BLOCK
ZOOM POSITION UNIT
(See Page 85)
CD-17P BOARD
R630 - 636
ZP MATRIX
W ON
OFF
T ON
MACRO OFF
ZOOM ON
W603
CN801
ZOOM POSITION
3.0V (IC808 ⑦)
1.5V (IC808 ①)
HALL OUT
5V
IC808
AD REF
3.0V
1.5V
IC803
A/D CONVERTER
VIN
CLK
B1 - B6
(IC808 ⑦) 3.0V
(IC808 ①) 1.5V
(+)
(-)
6
CAMERA
DDS SI
DDS SCK
CAM 5V
Q830
SERVO/SYSTEM CONTROL (CO-2P)
SYSTEM RESET
CN502
CN802
(L1-10)
DDS SI
DDS SCK
LOW CONTRAST
EVR CS
A/D EVR
Q809
Q810
IC804
EVR
LD
DI
CLK
IRIS
FOCUS SPEED
HALL OFFSET
MAX GAIN
TITLE A/D
CHARACTER
V SUB
AGC
N.C
Q816
BUFFER
CN801
W603
CN602
S902
FOCUS ∞
FOCUS N
CD-17P BOARD
(See Page 85)
LENS BLOCK
W
T
ZOOM
S901 ZOOM SWITCH
CN952
ZOOM TELE
ZOOM WIDE
CN803
J STB
MOSI
SCK
RC-29P
(See Page 1

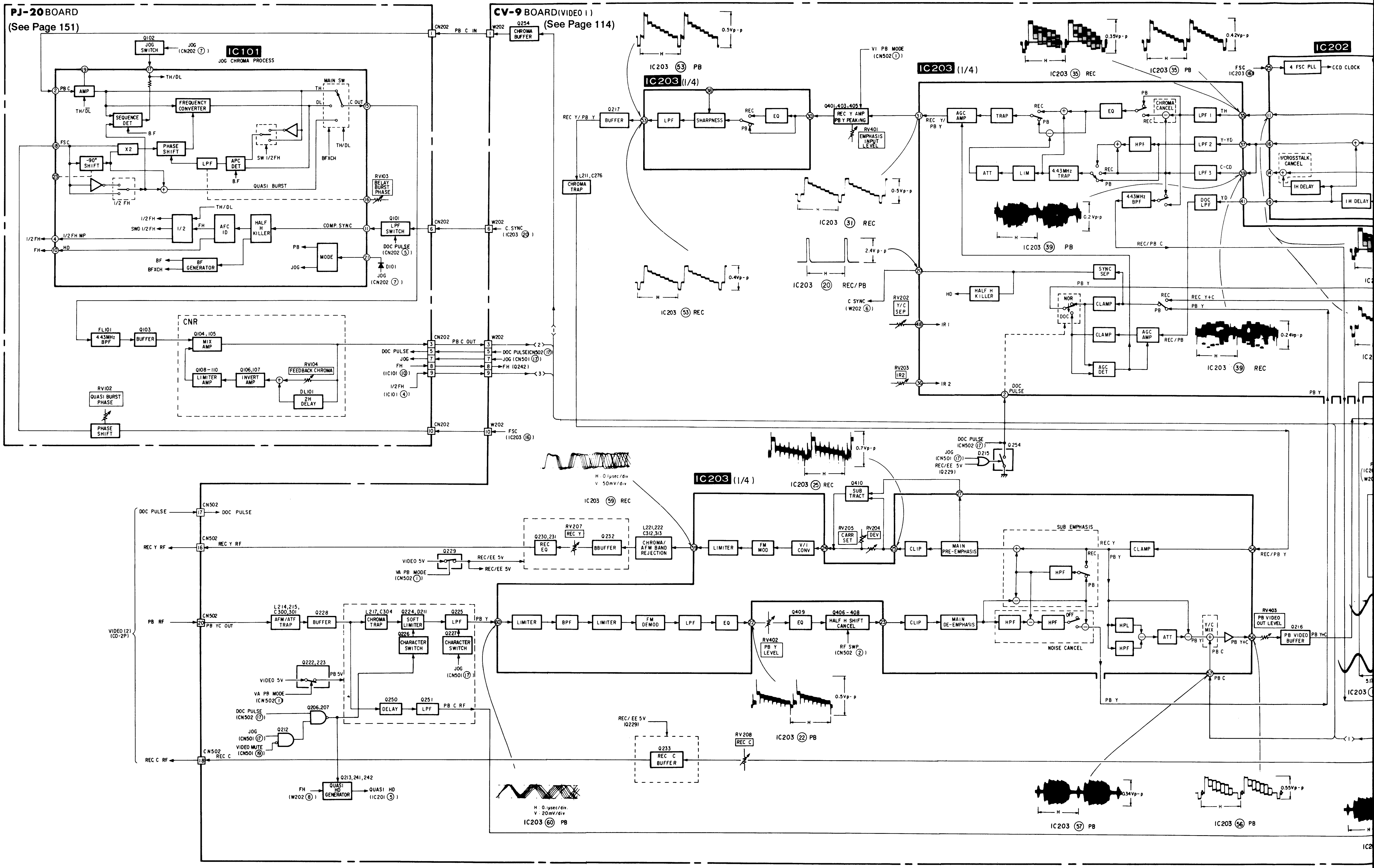

IC801
AF PROCESS
CKP
MC IN
VD
HD
SO IN
2 TO 1 ANALOG SW
SI IN
SWOT
ADRF
ANI 0
ANI 1
ANI 2
ANI 3
ANI 4
ANI 5
7 LINE TO 1 LINE DATA MULTIPLEXER
CONT
N.C
IP SG
AF DISP
VIDEO
MCO 8
AREA
XCS
SCK
SI
SC
XRST
ADI0
ADI5
ADCK
ADCV
IC802
AUTO FOCUS CPU
MACRO
IRIS GAIN
4.8V
FSPD 3
FSPD 2
FSPD 1
FSPD 0
FOCUS N
FOCUS ∞
FOCUS FG
SS OUT
SS
ZOOM T
ZOOM W
CLK IN
AREA
XCS
SCK
MOSI
MISO
SYS RST
EVR CS
LOW CONTRAST
J STB
AFSSW DASTB
IC803
A/D CONVERTER
V IN
CLK
B1-B6
(IC808 ⑦)3.0V
(IC808 ①)1.5V
(+)
(−)
IC804
EVR
LD
DI
CLK
IRIS
FOCUS SPEED
HALL OFFSET
MAX GAIN
TITLE A/D
CHARACTER
V SUB
AGC
N.C
Q816
BUFFER
Q809
Q810
IRIS CONT
IRIS
Q818,822
BUFFER
HALL OS
HALL OUT
Q827,828
HALL OS BUFFER
IC806 (1/2)
FOCUS SPEED
FOCUS REF
Q819,820
AF UNREG
FOCUS REG
Vcc
IC805
AUTO FOCUS MOTOR DRIVE
IN1
IN2
OUT 1
OUT 2
P GND
D GND
FOCUS N
FOCUS ∞
FOCUS FG
Q824
FG DETECT
IC806 (1/2)
IC807 (1/2)
IRIS DRIVE
IC807 (1/4)
HALL AMP
RV801
HALL
1.5V
(IC808 ①)
IC810
ZOOM MOTOR DRIVE
Q812
Q811
ZOOM TELE
ZOOM WIDE
CN801
W603
DRIVE(+)
CONT(+)
CONT(−)
HALL (+)
1.5V
FOCUS N
FOCUS ∞
ZOOM W
ZOOM T
(See Page 85)
CD-17P BOARD
CN801
CN605
DRIVE (+)
CONT (+)
CONT (−)
HALL (+)
HALL (−)
M906
IRIS MOTOR
H
CN603
M904
FOCUS MOTOR
CN601
M905
ZOOM MOTOR
CN502
W502
CO-2P BOARD
W951
(See Page 140)
CN801
W603
CN602
FOCUS N
S902
CD-17P BOARD
(See Page 85)
LENS BLOCK
CN951
W
T
ZOOM
S901 ZOOM SWITCH
CN952
ZOOM TELE
ZOOM WIDE
RC-29P BOARD
(See Page 148)
CN803
J STB
MOSI
SCK

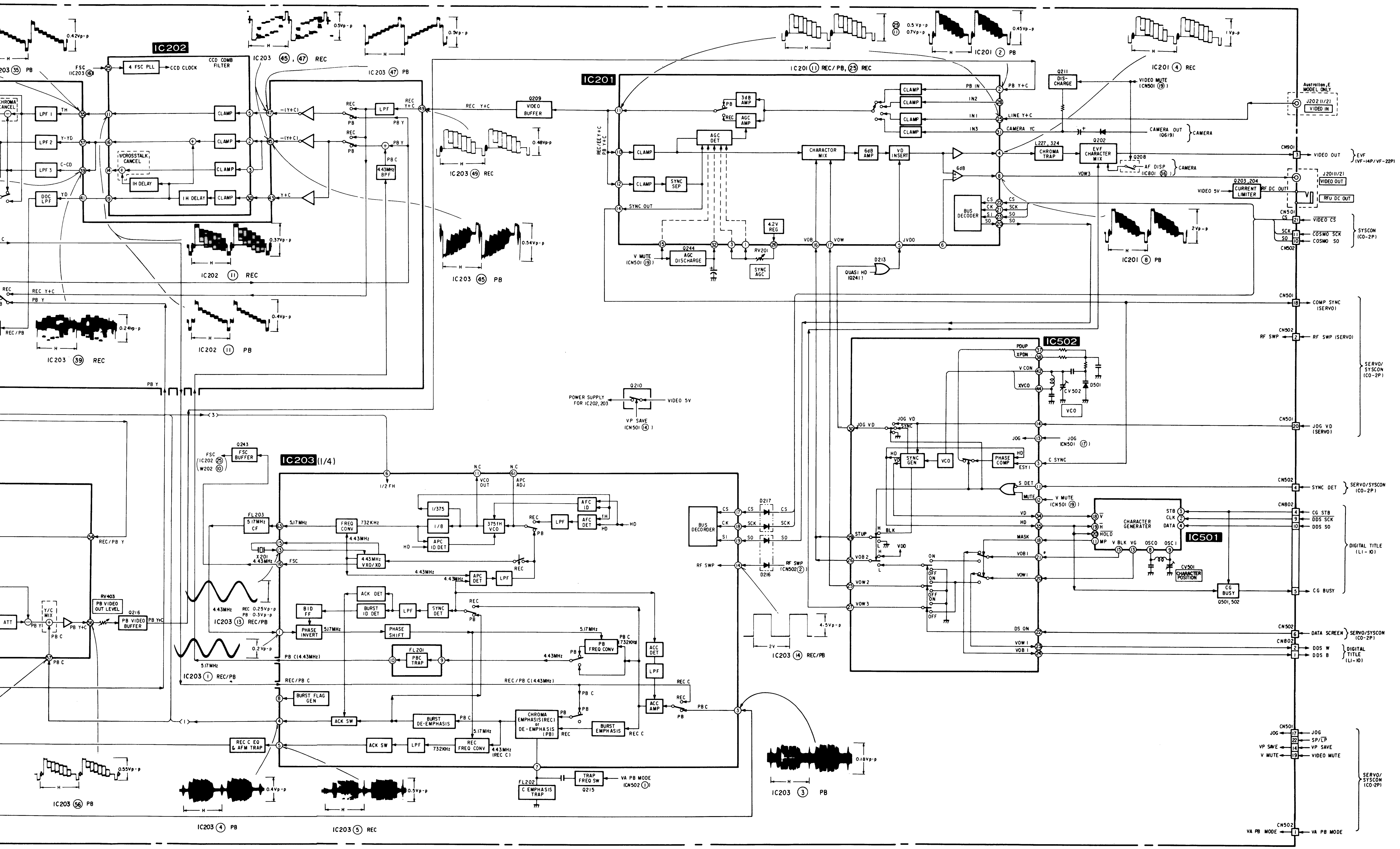
3-5. DIGITAL TITLE BLOCK DIAGRAM


CK-19P BOARD
(See Page 123)
LI-10 BOARD
(See Page 125)
DK-4P BOARD
(See Page 123)
IC651
FEATURE CONTROL (DDS CPU)
SS5V (W651 ⑥)
VTR POW
CG BUSY
CG STB
INT 1
DDS SO
DDS SCK
DDS SI
EVR CS
COSMO CS
TG STB
SRAM CS
TITLE CS
VDD
CL 2
CL 1
RESET
LI PE
TEST
X1
X2
CMO 0
CMO 1
CMO 2
CMO 3
CMI 0
CMI 1
CMI 2
CMI 3
COM 4
Q651
Q664
S659 TIME/SET
S656 COLOR/MODE
S652 SHUTTER SPEED
S660 DATE/+
S657 MEMORY
S655 FOCUS
S653 BACK LIGHT
S658 TITLE
S654 WHITE BALANCE
W652
S692 EDIT SEARCH−
S691 EDIT SEARCH+
S694 ZERO MEMORY
S693 COUNTER RESET
S654
S652
Q653 SS 5V DET
Q655 SYSTEM CLOCK FREQUENCY SWITCH
RV651 SYSTEM CLOCK
Q656, 657 RESET
C655
C656
EVER 5V (W651 ⑤)
Q658 - 661 LITHIUM BATTERY PRE END DETECT
D660 AUTO LOCK SENSOR
+5V
Q662, 665 AUTO LOCK SW
Q663 LOW CONT SW
CV651 CLOCK
X651 32.768kHz
4.5Vp-p
32.768kHz
IC651 ㊴
W651
CG BUSY
CG STB
VD
DDS SO
DDS SCK
DDS SI
EVR CS
COSMO CS
TG STB
LOW CON
SRAM CS
TITLE CS
DDS +B
LI 3V
SHIFT IN
LITHUIM BATTERY
IC903
TITLE MEMORY
64k BIT STATIC MEMORY
VDD
5V
Q904
CE 1
I/O 1 - I/O 8
OE
WE
A0 - A4
A5 - A12
NC
IC902
DIGITAL TITLE PROCESS
OE
WE
A1 - A5
A6 - A13
A14
SHIFT IN
TITLE Y WRITE
S→P P→S
TIMING GENERATOR
H ADDRESS COUNTER
H TITLE AREA
V ADDRESS COUNTER
A14 GENERATOR
CG BK
CG IN
CG MX
CHRACTER MIX
YR, YG, YB SYNTHESIS
INVERT
Y/C DELAY
CR, CG, CB SYNTHESIS
E DGE SYNTHESIS
TITLE Y+C READ
V TITLE AREA
A TITLE AREA SCROLL MODE GENERATOR
SCROLL MODE
FRAME DETECT
SYSTEM MODE COMMAND
COMMAND DECODE
SYSTEM RESET
H TIMING GENERATOR
PHASE DETECT
MASTER LOCK
BUSY
CS
SI
SCK
LCLR
OSC O
OSC I
PD UP
XP DN
CV901 PLL
D901
LPF
VCO
6.5Vp-p
10.6MHz
IC902 ⑪

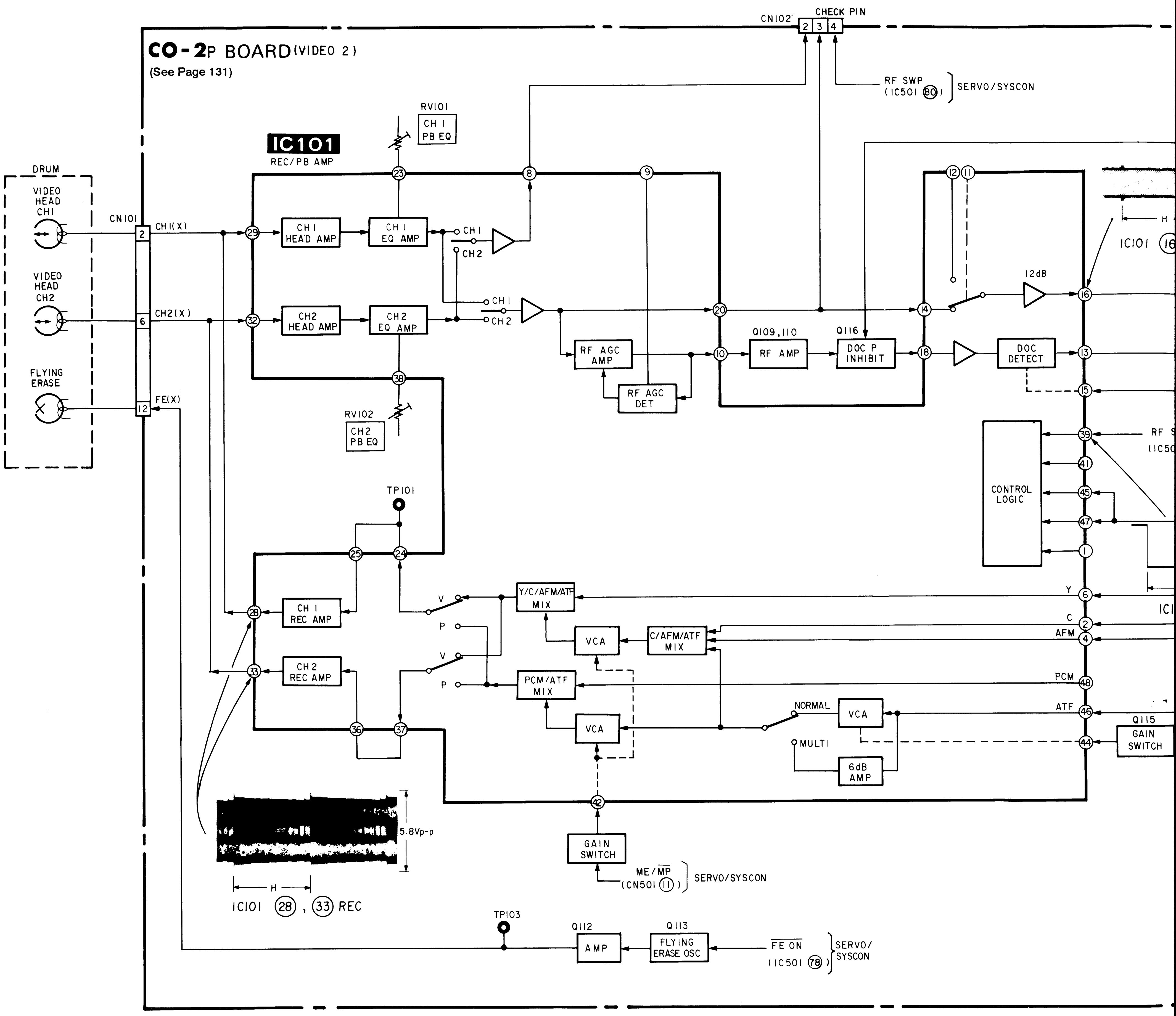

LI-10 BOARD
(See Page 125)
CV-9 BOARD (See Page 99, 114)
W651
CG BUSY
CG STB
VD
DDS SO
DDS SCK
DDS SI
EVR CS
COSMO CS
TG STB
LOW CON
SRAM CS
TITLE CS
DDS +B
LI 3V
SHIFT IN
Q651
Q664
S654
S652
Q653
SS 5V DET
Q655
SYSTEM CLOCK FREQUENCY SWITCH
RV651
SYSTEM CLOCK
C655
C656
EVER 5V (W651⑤)
Q658-661
LITHIUM BATTERY PRE END DETECT
4.5Vp-p
32.768kHz
IC651 ㊴
LITHUIM BATTERY
IC903
TITLE MEMORY
64k BIT STATIC MEMORY
VDD
5V
Q904
CE I
I/O 1 - I/O 8
11-13, 15-19
OE
WE
A0 - A4
10-6
A5 - A12
5, 4, 3, 25, 24, 21, 23, 2
NC
IC902
DIGITAL TITLE PROCESS
19-17, 63-59
21-24, 27
28, 29, 51, 52, 55, 53, 30, 50
A1
A5
A6
A13
A14
SHIFT IN
S→P
P→S
TITLE Y WRITE
TIMING GENERATOR
H ADDRESS COUNTER
H TITLE AREA
V ADDRESS COUNTER
A14 GENERATOR
CG BK
CG IN
CG MW
CHRACTER MIX
YR, YG, YB SYNTHESIS
TITLE Y READ
Y RO
Y CO
Y BO
Y MATRIX
EDGE SYNTHESIS
Y BLK
CR, CG, CB SYNTHESIS
C RO
C CO
C BO
C BLK
TITLE C READ
TITLE Y+C READ
INVERT
Y/C DELAY
V TITLE AREA
A TITLE AREA SCROLL MODE GENERATOR
SCROLL MODE
FRAME DETECT
SYSTEM MODE COMMAND
COMMAND DECODE
SYSTEM RESET
MASTER LOCK
H TIMING GENERATOR
PHASE DETECT
BUSY
CS
SI
SCK
LCLR
OSC O
OSC I
PD UP
XP DN
CV901
PLL
D901
LPF
VCO
6.5Vp-p
10.6MHz
IC902 ⑪
1.1Vp-p
H
IC942 ㊸
4.8Vp-p
IC942 ㊹
IC901
A-D CONVERTER
A/D EVR
Q902, 903
CLAMP
Q901
LPF
W802
CN802
CG BUSY
CG STB
DDS SO
DDS SCK
DDS SI
EVR CS
COSMO CS
TG STB
LOW CONTRAST
A/D EVR
DDS B
DDS W
A/D Y
CHRACTER
TR
TG
TB
C BLK
VD
HD
CN502
Q551(1/2), Q552
Q551(1/2), Q553
COSMO CS
COSMO SO
COSMO SCK
COSMO SI
SERVO/SYSTEM CONTROL (CO-2P)
AUTO FOCUS
VIDEO(1)
CAMERA

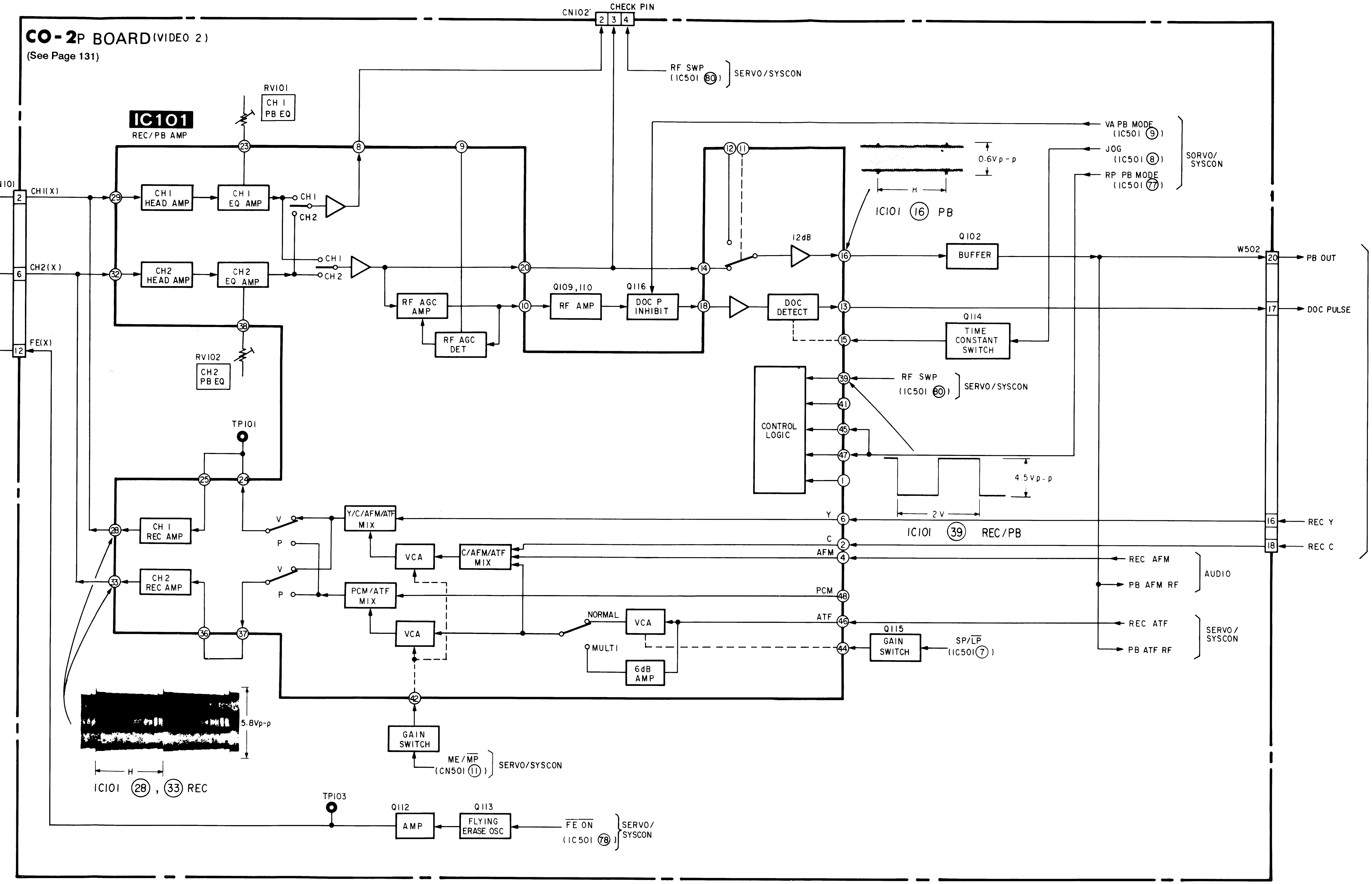
3-6. VIDEO BLOCK DIAGRAM(1)


PJ-20 BOARD
(See Page 151)
IC101
JOG CHROMA PROCESS
Q102 JOG SWITCH
AMP
SEQUENCE DET
FREQUENCY CONVERTER
PHASE SHIFT
X2
-90° SHIFT
LPF
APC DET
MAIN SW
SW 1/2FH
QUASI BURST
RV103 DELAY BURST PHASE
1/2
AFC ID
HALF H KILLER
COMP. SYNC
Q101 LPF SWITCH
MODE
BF GENERATOR
D101
FL101 4.43MHz BPF
Q103 BUFFER
CNR
Q104,105 MIX AMP
Q108-110 LIMITER AMP
Q106,107 INVERT AMP
RV104 FEEDBACK CHROMA
DL101 2H DELAY
RV102 QUASI BURST PHASE
PHASE SHIFT
CN202
CV-9 BOARD(VIDEO 1)
(See Page 114)
W202
Q254 CHROMA BUFFER
PB C IN
C. SYNC (IC203 ⑳)
PB C OUT
DOC PULSE
JOG
FH
1/2FH
FSC (IC203 ⑯)
IC203 (1/4)
Q217 BUFFER
LPF
SHARPNESS
EQ
L211, C276 CHROMA TRAP
Q401,403,405 REC Y AMP PB Y PEAKING
RV401 EMPHASIS INPUT LEVEL
V1 PB MODE (CN502 ①)
AGC AMP
TRAP
CHROMA CANCEL
LPF 1
LPF 2
LPF 3
HPF
ATT
LIM
4.43MHz TRAP
4.43MHz BPF
DOC LPF
SYNC SEP
HALF H KILLER
CLAMP
AGC AMP
AGC DET
RV202 Y/C SEP
RV203 IR2
IC202
4 FSC PLL
CCD CLOCK
V CROSSTALK CANCEL
1H DELAY
IC203 ㊸ PB
IC203 ㊸ REC
IC203 ㉛ REC
IC203 ⑳ REC/PB
IC203 ㉟ REC
IC203 ㉟ PB
IC203 ㊴ PB
IC203 ㊴ REC
D215
Q254
IC203 ㉕ REC
Q410 SUB TRACT
IC203 ㊾ REC
CN502
DOC PULSE
REC Y RF
PB RF
REC C RF
VIDEO (2) (CO-2P)
Q230,231 REC EQ
RV207 REC Y
Q232 BBUFFER
L221,222 C312,313 CHROMA/AFM BAND REJECTION
Q229
LIMITER
FM MOD
V/I CONV
RV205 CARR SET
RV204 DEV
CLIP
MAIN PRE-EMPHASIS
SUB EMPHASIS
L214,215, C300,301 AFM/ATF TRAP
Q228 BUFFER
L217, C304 CHROMA TRAP
Q224, D211 SOFT LIMITER
Q225 LPF
Q226 CHARACTER SWITCH
Q227 CHARACTER SWITCH
Q222,223
Q250 DELAY
Q251 LPF
Q206,207
Q212
Q213,241,242 QUASI HD GENERATOR
BPF
FM DEMOD
RV402 PB Y LEVEL
Q409 EQ
Q406-408 HALF H SHIFT CANCEL
RF SWP (CN502 ②)
MAIN DE-EMPHASIS
NOISE CANCEL
Y/C MIX
RV403 PB VIDEO OUT LEVEL
Q216 PB VIDEO BUFFER
IC203 ㉒ PB
Q233 REC C BUFFER
RV208 REC C
IC203 ㊿ PB
IC203 (57) PB
IC203 (56) PB

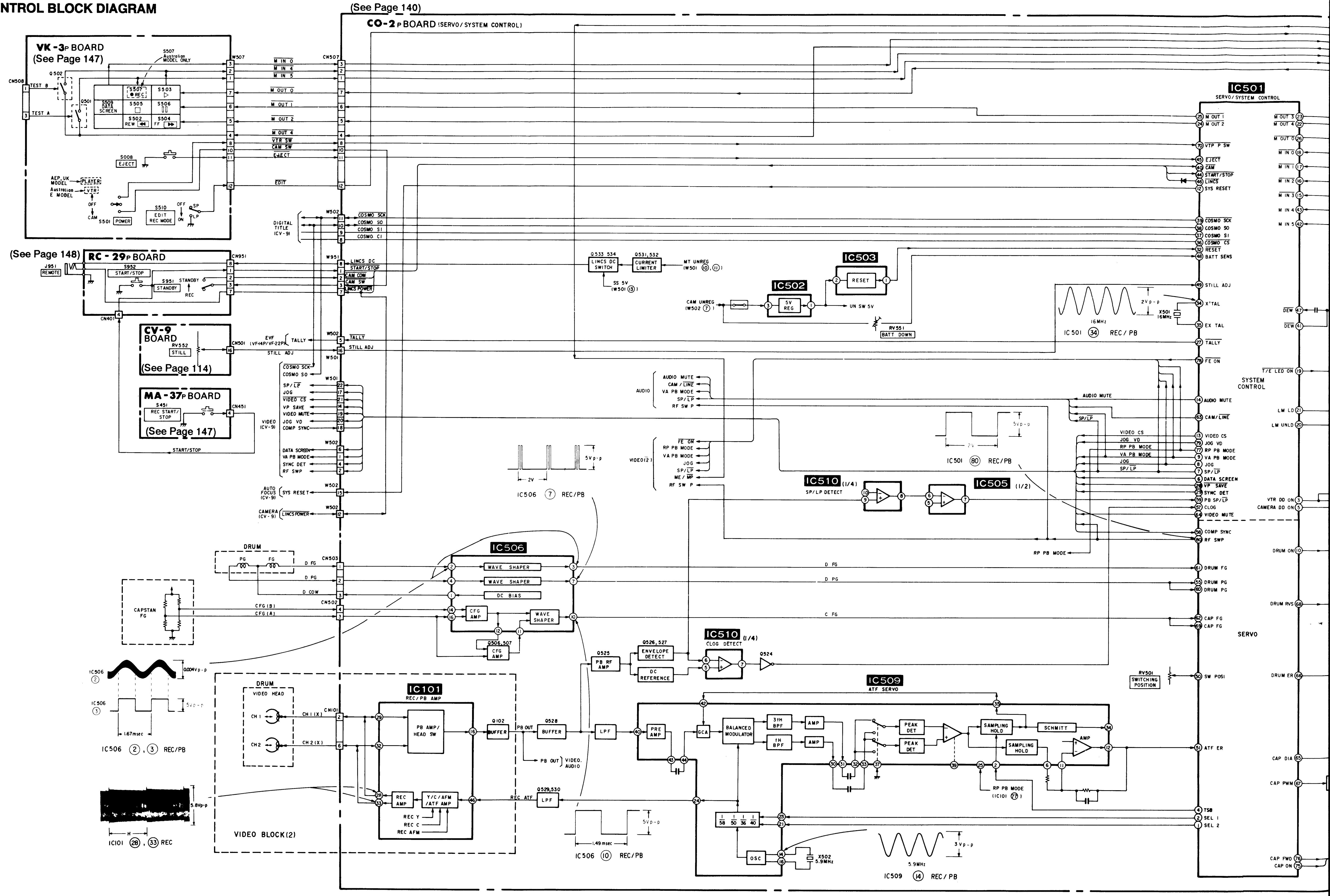

IC202
IC201
IC203 (1/4)
IC502
IC501
CCD COMB FILTER
4 FSC PLL
CCD CLOCK
LPF 1
LPF 2
LPF 3
DOC LPF
CLAMP
V CROSSTALK CANCEL
1H DELAY
4.43MHz BPF
VIDEO BUFFER
AGC DET
3dB AMP
AGC AMP
SYNC SEP
CHARACTOR MIX
6dB AMP
VD INSERT
CHROMA TRAP
EVF CHARACTER MIX
DIS-CHARGE
CURRENT LIMITER
BUS DECODER
AGC DISCHARGE
4.2V REG
SYNC AGC
FSC BUFFER
FREQ CONV
1/375
1/8
375fH VCO
AFC ID
AFC DET
APC ID DET
4.43MHz VXO/XO
APC DET
BID FF
PHASE INVERT
BURST ID DET
ACK DET
SYNC DET
PHASE SHIFT
PBC TRAP
PB FREQ CONV
ACC DET
ACC AMP
BURST FLAG GEN
ACK SW
BURST DE-EMPHASIS
CHROMA EMPHASIS(REC) or DE-EMPHASIS (PB)
BURST EMPHASIS
REC C EQ & AFM TRAP
REC FREQ CONV
C EMPHASIS TRAP
TRAP FREQ SW
PB VIDEO BUFFER
PB VIDEO OUT LEVEL
SYNC GEN
VCO
PHASE COMP
CHARACTER GENERATOR
CG BUSY
CHARACTER POSITION
POWER SUPPLY FOR IC202, 203
VIDEO 5V
VP SAVE (CN501 ⑭)
VIDEO OUT
EVF (VF-14P/VF-22P)
VIDEO IN
Australian, E MODEL ONLY
CAMERA OUT
CAMERA
AF DISP
VIDEO CS
COSMO SCK
COSMO SO
SYSCON (CO-2P)
COMP SYNC (SERVO)
RF SWP (SERVO)
SERVO/SYSCON (CO-2P)
JOG VD (SERVO)
SYNC DET
CG STB
DDS SCK
DDS SO
DIGITAL TITLE (LI-10)
CG BUSY
DATA SCREEN
DDS W
DDS B
JOG
SP/LP
VP SAVE
VIDEO MUTE
VA PB MODE
IC203 ㉟ PB
IC202 ⑪ REC
IC202 ⑪ PB
IC203 ㊴ REC
IC203 ㊺, ㊼ REC
IC203 ㊼ PB
IC203 ㊾ REC
IC203 ㊺ PB
IC201 ⑪ REC/PB, ㉕ REC
IC201 ② PB
IC201 ④ REC
IC201 ⑧ PB
IC203 ⑬ REC/PB
IC203 ① REC/PB
IC203 ⑭ REC/PB
IC203 ③ PB
IC203 ㊻ PB
IC203 ④ PB
IC203 ⑤ REC
0.42Vp-p
0.5Vp-p
0.45Vp-p
1Vp-p
0.37Vp-p
0.54Vp-p
0.4Vp-p
0.24Vp-p
0.48Vp-p
2Vp-p
4.5Vp-p
0.18Vp-p
0.55Vp-p
0.2Vp-p
REC 0.25Vp-p PB 0.3Vp-p

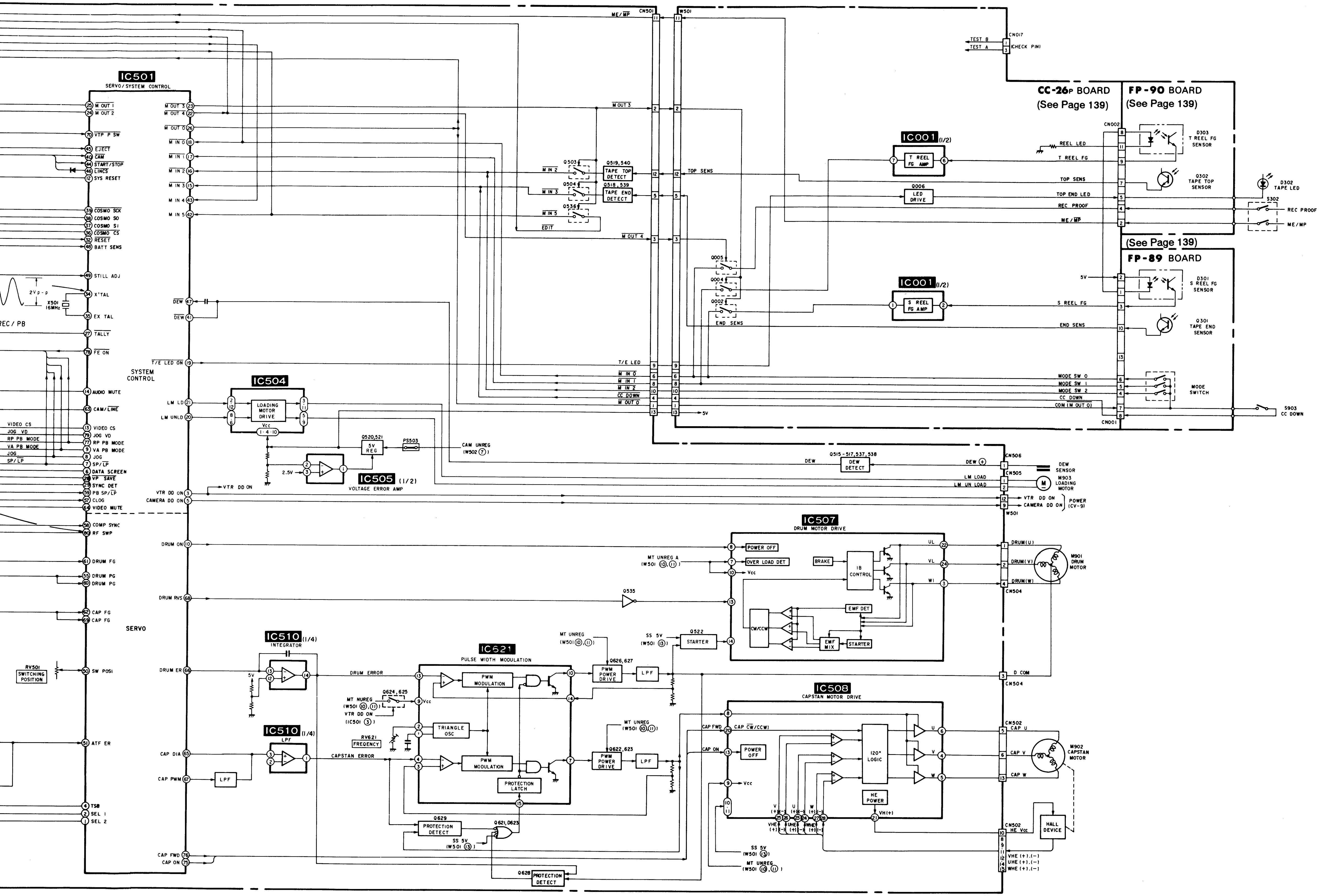
3-7. VIDEO BLOCK DIAGRAM(2)


CO-2P BOARD (VIDEO 2)
(See Page 131)
CN102
CHECK PIN
2 3 4
RF SWP (IC501 80) SERVO/SYSCON
RV101 CH1 PB EQ
IC101
REC/PB AMP
DRUM
VIDEO HEAD CH1
VIDEO HEAD CH2
FLYING ERASE
CN101
CH1(X)
CH2(X)
FE(X)
2
6
12
CH1 HEAD AMP
CH1 EQ AMP
CH2 HEAD AMP
CH2 EQ AMP
CH1
CH2
RF AGC AMP
RF AGC DET
RV102 CH2 PB EQ
Q109,110
RF AMP
Q116
DOC P INHIBIT
12dB
DOC DETECT
IC101 16
H
CONTROL LOGIC
RF S
(IC50
TP101
CH1 REC AMP
CH2 REC AMP
V
P
Y/C/AFM/ATF MIX
VCA
C/AFM/ATF MIX
PCM/ATF MIX
Y
C
AFM
PCM
ATF
NORMAL
MULTI
6dB AMP
Q115
GAIN SWITCH
IC1
5.8Vp-p
H
IC101 28, 33 REC
GAIN SWITCH
ME/MP (CN501 11) SERVO/SYSCON
TP103
Q112
AMP
Q113
FLYING ERASE OSC
FE ON (IC501 78) SERVO/SYSCON
23
8
9
29
32
38
20
10
18
14
12
11
16
13
15
39
41
45
47
1
6
2
4
48
46
44
25
24
28
33
36
37
42


CO-2P BOARD (VIDEO 2)
(See Page 131)
IC101
REC/PB AMP
CN102
CHECK PIN
2
3
4
RF SWP
(IC501 80)
SERVO/SYSCON
RV101
CH I PB EQ
RV102
CH2 PB EQ
23
8
9
12
11
VA PB MODE (IC501 9)
JOG (IC501 8)
RP PB MODE (IC501 77)
SORVO/SYSCON
0.6Vp-p
H
IC101 16 PB
CH1(X)
CH2(X)
FE(X)
2
6
12
29
32
CH I HEAD AMP
CH I EQ AMP
CH I
CH2
CH2 HEAD AMP
CH2 EQ AMP
CH I
CH 2
38
12dB
Q102
BUFFER
W502
20
PB OUT
20
14
16
Q109,110
RF AMP
Q116
DOC P INHIBIT
RF AGC AMP
RF AGC DET
10
18
DOC DETECT
13
17
DOC PULSE
15
Q114
TIME CONSTANT SWITCH
CONTROL LOGIC
39
41
45
47
1
RF SWP
(IC501 80)
SERVO/SYSCON
4.5Vp-p
2V
IC101 39 REC/PB
VIDEO(1)
(CV-9)
TP101
25
24
V
P
V
P
Y/C/AFM/ATF MIX
Y
6
16
REC Y
C
2
18
REC C
28
CH I REC AMP
33
CH 2 REC AMP
VCA
C/AFM/ATF MIX
AFM
4
REC AFM
PB AFM RF
AUDIO
PCM/ATF MIX
PCM
48
36
37
VCA
NORMAL
VCA
ATF
46
REC ATF
PB ATF RF
SERVO/SYSCON
MULTI
6dB AMP
Q115
GAIN SWITCH
44
SP/LP
(IC501 7)
42
GAIN SWITCH
ME/MP
(CN501 11)
SERVO/SYSCON
5.8Vp-p
H
IC101 28, 33 REC
TP103
Q112
AMP
Q113
FLYING ERASE OSC
FE ON
(IC501 78)
SERVO/SYSCON

3-8. SERVO, SYSTEM CONTROL BLOCK DIAGRAM


(See Page 140)
CO-2P BOARD (SERVO/SYSTEM CONTROL)
VK-3P BOARD
(See Page 147)
S507 Australian MODEL ONLY
S507 ●REC
S503 ▷
S509 DATA SCREEN
S505
S506
S502 REW ◀◀
S504 FF ▶▶
Q502
Q501
CN508
TEST B
TEST A
S008 EJECT
AEP, UK MODEL
PLAYER
Australian E MODEL
VTR
CAM
OFF
S501 POWER
S510 EDIT REC MODE
SP
LP
W507
CN507
M IN 0
M IN 4
M IN 5
M OUT 0
M OUT 1
M OUT 2
M OUT 4
VTR SW
CAM SW
EJECT
EDIT
DIGITAL TITLE (CV-9)
W502
COSMO SCK
COSMO SO
COSMO SI
COSMO CI
(See Page 148)
RC-29P BOARD
J951 REMOTE
S952 START/STOP
S951 STANDBY
STANDBY
REC
CN951
W951
LINCS DC
START/STOP
CAM COM
CAM SW
LINCS POWER
CN401
CV-9 BOARD
RV552 STILL
(See Page 114)
CN501
EVF (VF-14P/VF-22P)
TALLY
STILL ADJ
W501
MA-37P BOARD
S451 REC START/STOP
CN451
(See Page 147)
START/STOP
COSMO SCK
COSMO SO
SP/LP
JOG
VIDEO CS
VP SAVE
VIDEO MUTE
JOG VD
COMP SYNC
VIDEO (CV-9)
DATA SCREEN
VA PB MODE
SYNC DET
RF SWP
AUTO FOCUS (CV-9)
SYS RESET
CAMERA (CV-9)
LINCS POWER
DRUM
PG
FG
D FG
D PG
D COM
CN503
CAPSTAN FG
CFG (B)
CFG (A)
CN502
IC506
WAVE SHAPER
WAVE SHAPER
DC BIAS
CFG AMP
WAVE SHAPER
Q506, 507 CFG AMP
IC506 ⑦ REC/PB
5Vp-p
2V
IC506 ②
0.004Vp-p
IC506 ③
5Vp-p
1.67msec
IC506 ②, ③ REC/PB
5.8Vp-p
H
IC101 ㉘, ㉝ REC
VIDEO BLOCK (2)
DRUM
VIDEO HEAD
CH1
CH2
CN101
CH1 (X)
CH2 (X)
IC101
REC/PB AMP
PB AMP/HEAD SW
REC AMP
Y/C/AFM /ATF AMP
REC Y
REC C
REC AFM
Q102 BUFFER
PB OUT
Q528 BUFFER
PB OUT) VIDEO, AUDIO
Q529, 530 LPF
REC ATF
1.49msec
IC506 ⑩ REC/PB
Q533, 534 LINCS DC SWITCH
Q531, 532 CURRENT LIMITER
MT UNREG (W501 ⑩, ⑪)
SS 5V (W501 ⑬)
IC503 RESET
IC502 5V REG
CAM UNREG (W502 ⑦)
UN SW 5V
RV551 BATT DOWN
2Vp-p
X501 16MHz
16MHz
IC501 ㉞ REC/PB
AUDIO
AUDIO MUTE
CAM/LINE
VA PB MODE
SP/LP
RF SW P
VIDEO (2)
FE ON
RP PB MODE
VA PB MODE
JOG
SP/LP
ME/MP
RF SW P
5Vp-p
2V
IC501 ⑧⓪ REC/PB
IC510 (1/4) SP/LP DETECT
IC505 (1/2)
RP PB MODE
D FG
D PG
C FG
Q525 PB RF AMP
Q526, 527 ENVELOPE DETECT
DC REFERENCE
IC510 (1/4) CLOG DETECT
Q524
RV501 SWITCHING POSITION
IC509 ATF SERVO
LPF
PRE AMP
GCA
BALANCED MODULATOR
3fH BPF
fH BPF
AMP
AMP
PEAK DET
PEAK DET
SAMPLING HOLD
SAMPLING HOLD
SCHMITT
AMP
RP PB MODE (IC101 ⑦⑦)
58 50 36 40
OSC
X502 5.9MHz
3Vp-p
5.9MHz
IC509 ⑭ REC/PB
IC501 SERVO/SYSTEM CONTROL
M OUT 1
M OUT 2
VTR P SW
EJECT
CAM
START/STOP
LINCS
SYS RESET
COSMO SCK
COSMO SO
COSMO SI
COSMO CS
RESET
BATT SENS
STILL ADJ
X'TAL
EX TAL
TALLY
FE ON
AUDIO MUTE
CAM/LINE
VIDEO CS
JOG VD
RP PB MODE
VA PB MODE
JOG
SP/LP
DATA SCREEN
VP SAVE
SYNC DET
PB SP/LP
CLOG
VIDEO MUTE
COMP SYNC
RF SWP
DRUM FG
DRUM PG
DRUM PG
CAP FG
CAP FG
SW POSI
ATF ER
TSB
SEL 1
SEL 2
M OUT 3
M OUT 4
M OUT 0
M IN 0
M IN 1
M IN 2
M IN 3
M IN 4
M IN 5
DEW
DEW
SYSTEM CONTROL
T/E LED ON
LM LD
LM UNLD
VTR DD ON
CAMERA DD ON
SERVO
DRUM ON
DRUM RVS
DRUM ER
CAP DIA
CAP PWM
CAP FWD
CAP ON


IC501
SERVO/SYSTEM CONTROL
M OUT 1
M OUT 2
VTP P SW
EJECT
CAM
START/STOP
LINCS
SYS RESET
COSMO SCK
COSMO SO
COSMO SI
COSMO CS
RESET
BATT SENS
STILL ADJ
X'TAL
EX TAL
TALLY
FE ON
AUDIO MUTE
CAM/LINE
VIDEO CS
JOG VD
RP PB MODE
VA PB MODE
JOG
SP/LP
DATA SCREEN
VP SAVE
SYNC DET
PB SP/LP
CLOG
VIDEO MUTE
COMP SYNC
RF SWP
DRUM FG
DRUM PG
DRUM PG
CAP FG
CAP FG
SERVO
SW POSI
ATF ER
TSB
SEL 1
SEL 2
2Vp-p
X501 16MHz
REC/PB
RV501 SWITCHING POSITION
M OUT 3
M OUT 4
M OUT 0
M IN 0
M IN 1
M IN 2
M IN 3
M IN 4
M IN 5
DEW
DEW
SYSTEM CONTROL
T/E LED ON
LM LD
LM UNLD
VTR DD ON
CAMERA DD ON
DRUM ON
DRUM RVS
DRUM ER
CAP DIA
CAP PWM
CAP FWD
CAP ON
ME/MP
CN501
W501
Q503
Q504
Q536
Q519,540 TAPE TOP DETECT
Q518,539 TAPE END DETECT
EDIT
TOP SENS
M OUT 4
Q005
Q004
Q002
END SENS
T/E LED
CC DOWN
M OUT 0
5V
IC504
LOADING MOTOR DRIVE
Vcc
Q520,521 5V REG
PS503
CAM UNREG (W502 ⑦)
2.5V
IC505 (1/2)
VOLTAGE ERROR AMP
VTR DD ON
TEST B
TEST A
CN017
CHECK PIN
CC-26P BOARD (See Page 139)
FP-90 BOARD (See Page 139)
CN002
IC001 (1/2)
T REEL FG AMP
REEL LED
T REEL FG
D303 T REEL FG SENSOR
Q302 TAPE TOP SENSOR
Q006 LED DRIVE
TOP END LED
REC PROOF
D302 TAPE LED
S302
REC PROOF
ME/MP
(See Page 139)
FP-89 BOARD
IC001 (1/2)
S REEL FG AMP
D301 S REEL FG SENSOR
S REEL FG
Q301 TAPE END SENSOR
MODE SW 0
MODE SW 1
MODE SW 2
CC DOWN
COM (M OUT 0)
MODE SWITCH
S903 CC DOWN
CN001
Q515-517,537,538 DEW DETECT
DEW
DEW SENSOR
CN506
CN505
LM LOAD
LM UN LOAD
M903 LOADING MOTOR
VTR DD ON
CAMERA DD ON
POWER (CV-9)
IC507
DRUM MOTOR DRIVE
POWER OFF
OVER LOAD DET
BRAKE
18 CONTROL
MT UNREG A (W501 ⑩,⑪)
Vcc
UL
VL
WL
DRUM(U)
DRUM(V)
DRUM(W)
M901 DRUM MOTOR
CN504
Q535
EMF DET
CW/CCW
EMF MIX
STARTER
SS 5V (W501 ⑬)
Q522 STARTER
MT UNREG (W501 ⑩,⑪)
Q626,627 PWM POWER DRIVE
LPF
D COM
IC510 (1/4)
INTEGRATOR
5V
DRUM ERROR
IC621
PULSE WIDTH MODULATION
PWM MODULATION
MT NUREG (W501 ⑩,⑪)
Q624,625
VTR DD ON (IC501 ③)
TRIANGLE OSC
RV621 FREQENCY
IC510 (1/4)
LPF
CAPSTAN ERROR
PWM MODULATION
PROTECTION LATCH
Q629 PROTECTION DETECT
Q621,Q623
SS 5V (W501 ⑬)
Q628 PROTECTION DETECT
MT UNREG (W501 ⑩,⑪)
Q622,623 PWM POWER DRIVE
IC508
CAPSTAN MOTOR DRIVE
CAP FWD
CAP CW/CCW
CAP ON
POWER OFF
120° LOGIC
HE POWER
VH(+)
CN502
CAP U
CAP V
CAP W
M902 CAPSTAN MOTOR
HALL DEVICE
HE Vcc
VHE (+),(-)
UHE (+),(-)
WHE (+),(-)
SS 5V (W501 ⑬)
MT UNREG (W501 ⑩,⑪)

3-9. SYSTEM CONTROL SECTION FUNCTION DESCRIPTION

The system control section consists of the following four microcomputers:

- Mode/mechanism control microcomputer CXP80116
- DDS microcomputer μPD7508BGB
- EVR microcomputer MC68HC05N4FU
- AF microcomputer MC68HC05C4FU

3-9-1. Mode/Mechanism Control Microcomputer CXP80116 (IC501 on CO-2P Board)

1. Function description

1) Power ON/OFF control
2) Key matrix read
   (Playback, record, fast-forward, rewind, pause, stop, data screen)
   * REC key is only provided with E, Australian model .
3) Reading of other keys
   (Power (camera/off/video), cassette eject)
4) Servos
5) Loading motor control
6) Error detection
   - Battery end/pre-end
   - Tape end
   - No cassette
   - Erasure prevention
   - DEW (condensation)
   - PAUSE release
   - CLOG (jamming)
   - L. motor emergency
   - Drum rotation
   - Drum phase
   - Reel rotation
   - Capstan rotation
   - Drum/capstan start
6) H.M.S. counter
7) JOG VD insertion
8) Execution of various modes

2. Abbreviated specifications

- 8-bit high-speed, highly integrated single chip microcomputer
- A/D converter, 8-bit, 8-channel
- Serial interface
- Time/counter
- Time base timer
- Vector interrupts
- High precision timing pattern generation function (high-speed output)
- PWM/DA gate pulse output, 12-bit, 2-channel
- High precision measurement function (FRC) for servo signals
- Power on reset function
- Sleep and stop functions
- External memory expansion mode, microcomputer mode
- ROM: 16 kbytes
- RAM: 352 kbytes
- Speed: 500 ns
- Process: C MOS
- Operating voltage: 4.5 to 5.5V
- Package: 80-pin flat package

3-9-2. DDS Microcomputer μPD7508BGB (IC651 on DK-4P Board)

1. Function description

1) Internal data communication control
2) Date/time measurement
3) Reading of key matrix
   (White balance, electronic shutter, edit search +/–, auto-lock, focus mode, counter reset, zero memory, title, store, color/mode, back light compensation, date/forward, time/set)

2. Operation modes

As shown in the table below, the operation mode is determined according to the position of the power switch (camera/off/video) and whether or not there is a main battery.

Mode	Main Battery	Power Switch	Microcomputer Power	Clock Mode	Main Functions
BACK UP	No	Camera/off/video	Lithium battery	500 ms intermittent oscillation	• Backup of title and tape counter data • Clock count operation
	Yes	Off			
VTR ON	Yes	Video	SS 5V (main battery)	Continuous oscillation	• Serial communication with EVR and mode/mechanism control micro-computer • Indication to EVF • Acceptance of zero memory and counter reset keys
CAM ON	Yes	Camera	SS 5V (main battery)	Continuous oscillation	• VTR ON functions + all camera features • Indication control for white balance, focus, titles, electronic shutter, etc.

3-9-3. EVR Microcomputer MC68HC05N4FU (IC601 on CV-9 Board)

1. Function description

1) EVR control
2) Auto white balance control
3) Electronic shutter

3-9-4. AF

1. Functio

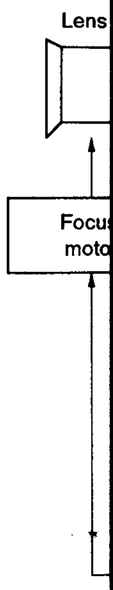
1) AF cont
2) Power f
3) Zoom m

2. Auto fo
(Λ -AF

The high fr
luminance si
using externa

3. Outline

The frequenc
2 MHz are e
digitally inte
the evaluati
information
finding the p
that:
Picture is in
frequency c
increases



ctions

ape counter data
on

on with EVR and
control micro-

ro memory and

s + all camera

or white balance,
ic shutter, etc.

3-9-4. AF Microcomputer MC68HC05C4FU (IC802 on CV-9 Board)

1. Function description

1) AF control
2) Power focus
3) Zoom motor drive

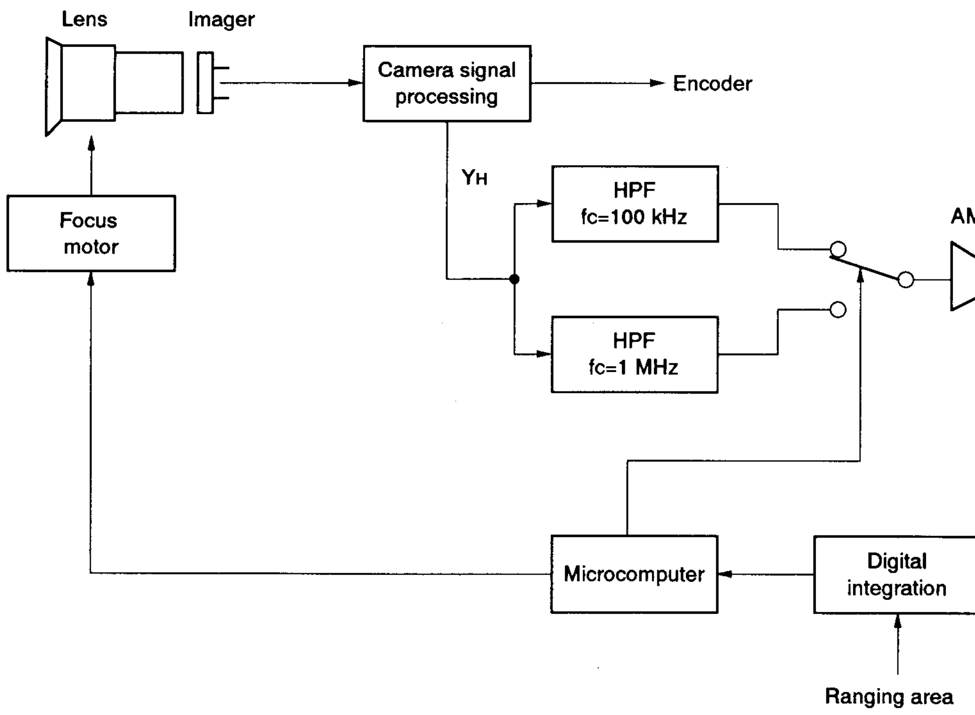
2. Auto focus system of this unit
(Λ -AF: Image processing system)

The high frequency components of the video signal (actually luminance signal)are microcomputer processed by TCL without using external sensors to control the focus.

3. Outline of operation

The frequency components from 100k to 2 MHz and from 1M to 2 MHz are extracted from the luminance signal Y, and these are digitally integrated for each field. This integration value is called the evaluation value. This evaluation value becomes the information for auto focusing, and the focus ring is controlled by finding the peaks in the evaluation values based on the concepts that:

Picture is in focus → edges of image become clearer → high frequency components of image increase → evaluation value increases



3-9-5. Mode/Mechanism Control — Video, Audio Block Interface

Signal	I/O	Pin No.	STOP	FF	REW	CUE	REVIEW	PB	PB · PAUSE	REC	REC · PAUSE
ME/$\overline{\text{MP}}$	O	Pin ⑪ of CN501 on CO-2P board	*1	*1	*1	*1	*1	*1	*1	*1	*1
SP/$\overline{\text{LP}}$	O	Pin ⑦ of IC501 on CO-2P board	*17	*17	*17	*2	*2	*2	*2	*17	*17
JOG	O	Pin ⑧ of IC501 on CO-2P board	L	L	L	H	H	L	H	L	L
VA PB MODE	O	Pin ⑨ of IC501 on CO-2P board	L	L	L	H	H	H	H	L	L
VIDEO CS	O	Pin ⑬ of IC501 on CO-2P board	*3	*3	*3	*3	*3	*3	*3	*3	*3
AUDIO MUTE	O	Pin ⑭ of IC501 on CO-2P board	L	L	L	H	H	L	H	L	L
$\overline{\text{VP SAVE}}$ *16	O	Pin ㉘ of IC501 on CO-2P board	H	H	H	L	L	L	L	L	H
SYNC DET *14	O	Pin ㉙ of IC501 on CO-2P board	*4	*4	*4	*5	*5	*5	*5	*4	*4
COSMO SO	O	Pin ㊳ of IC501 on CO-2P board	*6	*6	*6	*6	*6	*6	*6	*6	*6
$\overline{\text{COSMO SCK}}$	O	Pin ㊴ of IC501 on CO-2P board	*7	*7	*7	*7	*7	*7	*7	*7	*7
CLOG	I	Pin (57) of IC501 on CO-2P board	H	*8	*8	*8	*8	*8	*8	H	H
COMP SYNC	I	Pin (58) of IC501 on CO-2P board	*9	*9	*9	*9	*9	*9	*9	*9	*9
PB SP/$\overline{\text{LP}}$	I	Pin (59) of IC501 on CO-2P board	L	*10	*10	*10	*10	L	L	L	L
CAM/$\overline{\text{LINE}}$	O	Pin (63) of IC501 on CO-2P board	*11	*11	*11	*11	*11	*11	*11	*11	*11
VIDEO MUTE *15	O	Pin (64) of IC501 on CO-2P board	L	L	L	L	L	L	L	L	L
RP PB MODE	O	Pin (77) of IC501 on CO-2P board	L	L	L	H	H	H	H	L	L
$\overline{\text{FE ON}}$	O	Pin (78) of IC501 on CO-2P board	H	H	H	H	H	H	H	L	H
JOG VD	O	Pin (79) of IC501 on CO-2P board	L	L	L	*12	*12	L	*12	L	L
RF SWP	O	Pin (80) of IC501 on CO-2P board	H	*13	*13	*13	*13	*13	*13	*13	*13

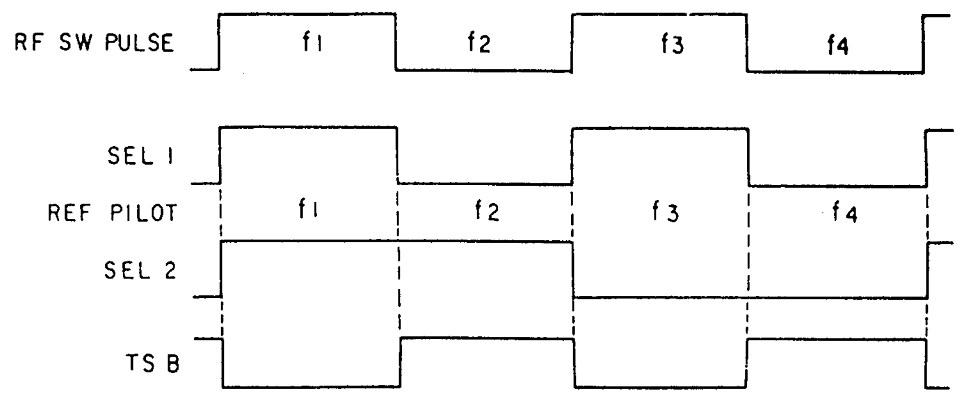
*1. "L" when using MP tape
*2. According to recorded mode of PB tape (SP: "H", LP: "L")
*3. Approx. 20 msec period "L" pulse. Chip select signal to video IC (IC201 and IC203 on CV-9 board)
*4. "H" when video signals are input.
*5. "H" when video signals are played back.
*6. 1V period "L" pulse train
*7. 1V period "L" pulse train
*8. Video head clog: "H", Normally: "L"
*9. Positive polarity composite sync signal
*10. SP mode recorded tape: "H", LP mode recorded tape: "L"
*11. "L" when the power switch is set to VIDEO position and "H" when CAMERA position.
*12. 1V period "H" pulse
*13. 2V period duty 50% pulse
*14. Detects a composite sync signal input at pin (58) of IC501.
*15. "H" when STOP to/from PB mode transition period.
*16. This signal switches a power (on/off) of video circuit IC202 and IC203.
*17. Depends on the SP/LP switch (S510 on the VK-3P board) position (SP: "H", LP: "L")

3-9-6. Mode/Mechanism Control — Servo Peripheral Circuit Interface

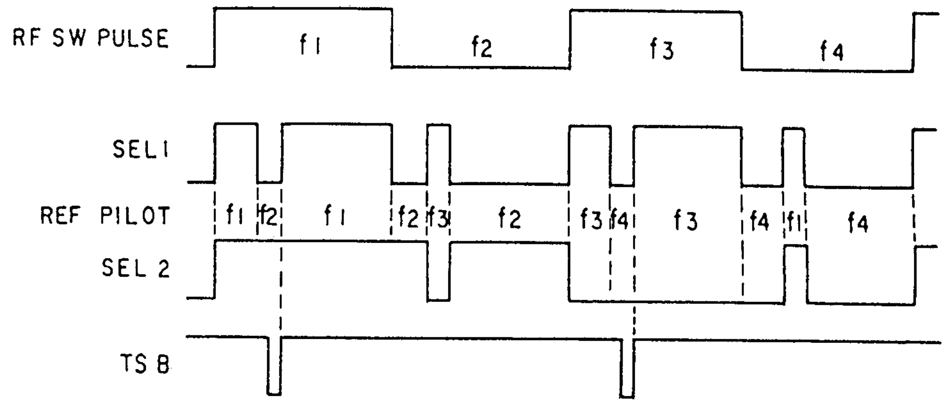
Signal	I/O	Pin No.	EJECTED	THREAD-ING	UN THREAD-ING	STOP	FF	REW	CUE	REVIEW	PB	PB · PAUSE	REC	REC · PAUSE
SEL 2 *17	O	Pin ① of IC501 on CO-2P board	L	L	L	L	H	H	*3	*3	*2	H	*1	H
SEL 1 *17	O	Pin ② of IC501 on CO-2P board	H	H	H	H	H	H	*3	*3	*2	L	*1	H
TS B *18	O	Pin ④ of IC501 on CO-2P board	L	L	L	L	L	L	*3	*3	*2	*16	*1	L
DRUM ON	O	Pin ⑩ of IC501 on CO-2P board	L	H	H	L	H	H	H	H	H	H	H	H
SW POSI ADJ	I	Pin ㊿ of IC501 on CO-2P board	*5	*5	*5	*5	*5	*5	*5	*5	*5	*5	*5	*5
ATF ERROR	I	Pin (51) of IC501 on CO-2P board	*6	*6	*6	*6	*7	*7	*7	*7	*7	*7	*6	*6
DRUM PG	I	Pins (55) and (60) of IC501 on CO-2P board	L	*8	*8	L	*8	*8	*8	*8	*8	*8	*8	*8
DRUM FG	I	Pin (61) of IC501 on CO-2P board	H	*9	*9	H	*9	*9	*9	*9	*9	*9	*9	*9
CAP FG	I	Pins (62) and (69) of IC501 on CO-2P board	H/L	PULSE	PULSE	H/L	*10	*10	*10	*10	*10	H/L	*10	H/L
CAP D/A	I	Pin (65) of IC501 on CO-2P board	L	*11	*11	L	*11	*11	*11	*11	*11	L	*11	L
DRUM D/A	O	Pin (66) of IC501 on CO-2P board	L	*12	*12	L	*12	*12	*12	*12	*12	*12	*12	*12
CAP PWM	O	Pin (67) of IC501 on CO-2P board	L	*13	*13	L	*13	*13	*13	*13	*13	L	*13	L
DRUM FWD/REV	O	Pin (68) of IC501 on CO-2P board	*14	*14	*14	*14	*14	*14	*14	*14	*14	*14	*14	*14
CAP ON	O	Pin (75) of IC501 on CO-2P board	L	H	H	L	H	H	H	H	H	L	H	L
CAP FWD/$\overline{\text{RVS}}$	O	Pin (76) of IC501 on CO-2P board	L	L	H	L	H	L	H	L	H	L	H	L
RF SWP	O	Pin (80) of IC501 on CO-2P board	H	*15	*15	H	*15	*15	*15	*15	*15	*15	*15	*15

*1. See timing chart 1.
*2. See timing chart 2.
*3. See timing chart 3.
*4. 1V period "H" pulse
*5. DC voltage set with RV501 (Switching position adjustment)
*6. Approx. 2.3 Vdc constant
*7. ATF error voltage
*8. 2V period "H" pulse
*9. 1.7 msec period pulse
*10. Pulses of frequecy in proportion to tape speed
*11. "H" pulse output when rising or falling edges of the capstan, Normaly: "HIZ"
*12. 6 msec period PWM signal (tri-state) of "H", "L" and "HIZ" (2.5 Vdc)
*13. 64 μsec period PWM signal
*14. Normally: "H"
*15. 2V period duty 50% pulse
*16. V period "L" pulse
*17. ATF REF PILOT signal frequency (f1 to f4) selecting signal
*18. ATF AGC timing control signal

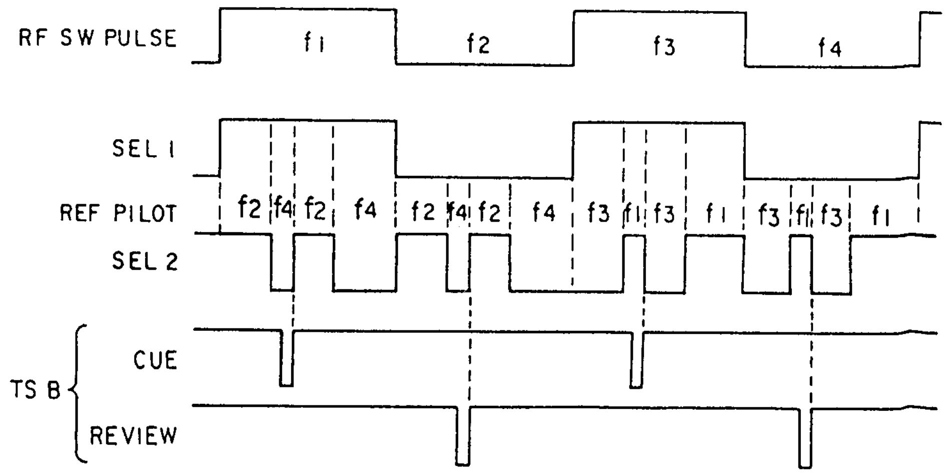
Timing chart 1 (REC)



Timinfg chart 2 (PB)



Timing chart 3 (CUE/REVIEW)



3-9-7. Mode/Mechanism Control — Mode/Mechanism Control Peripheral Circuit Interface

Signal	I/O	Pin No.	I/O Level
VTR DD ON	O	Pin ③ of IC501 on CO-2P board	VTR DC/DC converter on/off signal "H" when power of video or camera is turned on.
CAM DD ON	O	Pin ⑤ of IC501 on CO-2P board	Camera DC/DC converter on/off signal "H" when power of camera is turned on.
DATA SCREEN	O	Pin ⑥ of IC501 on CO-2P board	"H" when data screen is turned on.
SP/$\overline{\text{LP}}$	O	Pin ⑦ of IC501 on CO-2P board	"H" during SP recording mode or playback of tape recorded in SP mode
$\overline{\text{SYS RESET}}$	O	Pin ⑫ of IC501 on CO-2P board	Reset signal of AF microcomputer (IC802 on the CV-9 board) Normally: "H" ("L" pulse when power of video or camera is turned on.)
$\overline{\text{M IN 3}}$	I	Pin ⑮ of IC501 on CO-2P board	No key matrix input signal: "H" (Other: "L")
$\overline{\text{M IN 2}}$	I	Pin ⑯ of IC501 on CO-2P board	No key matrix input signal: "H" (Other: "L")
$\overline{\text{M IN 1}}$	I	Pin ⑰ of IC501 on CO-2P board	No key matrix input signal: "H" (Other: "L")
$\overline{\text{M IN 0}}$	I	Pin ⑱ of IC501 on CO-2P board	No key matrix input signal: "H" (Other: "L")
T/E LED	O	Pin ⑲ of IC501 on CO-2P board	Tape top/end LED lighting control signal STOP/PB/REC/PB·PAUSE/REC·PAUSE/REVIEW: 170 msec period "H" pulse, CUE: 22 msec period "H" pulse, FF/REW: 4 msec period "H" pulse, EJECT or CASSETTE IN detecting: 22 msec period "H" pulse
LM UNLD	O	Pin ⑳ of IC501 on CO-2P board	Normally: "L" ("H" in Unthreading, "H" pulse is output in Mechanical mode transition)
LM LD	O	Pin ㉑ of IC501 on CO-2P board	Normally: "L" ("H" in Threading, "H" pulse is output in Mechanical mode transition)
M OUT 4	O	Pin ㉒ of IC501 on CO-2P board	Key matrix output signal 20 msec period "H" pulse
M OUT 3	O	Pin ㉓ of IC501 on CO-2P board	Key matrix output signal 20 msec period "H" pulse
$\overline{\text{M OUT 2}}$	O	Pin ㉔ of IC501 on CO-2P board	Key matrix output signal 20 msec period "L" pulse
$\overline{\text{M OUT 1}}$	O	Pin ㉕ of IC501 on CO-2P board	Key matrix output signal 20 msec period "L" pulse
$\overline{\text{M OUT 0}}$	O	Pin ㉖ of IC501 on CO-2P board	Key matrix output signal 20 msec period "L" pulse
$\overline{\text{TALLY}}$	O	Pin ㉗ of IC501 on CO-2P board	TALLY LED control signal. Normally: "H" ("L" during REC mode when power switch is set to CAMERA position)
$\overline{\text{RESET}}$	I	Pin ㉜ of IC501 on CO-2P board	Normally: "H" (Reset: "L")
$\overline{\text{COSMO CS}}$	I	Pin ㊱ of IC501 on CO-2P board	1V period "L" pulse (18 msec period in VTR mode)
COSMO SI	I	Pin ㊲ of IC501 on CO-2P board	1V period "H" pulse train (18 msec period in VTR mode)
COSMO SO	O	Pin ㊳ of IC501 on CO-2P board	1V period "L" pulse train (18 msec period in VTR mode)
$\overline{\text{COSMO SCK}}$	I/O	Pin ㊴ of IC501 on CO-2P board	1V period "L" pulse train (18 msec period in VTR mode)
$\overline{\text{CAM P SW}}$	I	Pin ㊵ of IC501 on CO-2P board	"L" when power switch (S501 on the VK-3P board) is set to CAMERA position and standby switch (S951 on the RC-29P board) to STANDBY position.
$\overline{\text{M IN 5}}$	I	Pin ㊷ of IC501 on CO-2P board	No key matrix input signal: "H" (Other: "L")
$\overline{\text{M IN 4}}$	I	Pin ㊸ of IC501 on CO-2P board	No key matrix input signal: "H" (Other: "L")
$\overline{\text{START/STOP}}$	O	Pin ㊹ of IC501 on CO-2P board	Normally: "H" ("L" when start/stop button (S952 on the RC-29P board or S451 on the MA-37P board) is pressed.)
$\overline{\text{EJECT}}$	I	Pin ㊺ of IC501 on CO-2P board	Normally: "H" ("L" when EJECT switch (S508 on VK-3P board) is pressed.)
$\overline{\text{LINCS}}$	I	Pin ㊻ of IC501 on CO-2P board	Normally: "H" ("L" pulse when power button of the remote controller is turned on.)
$\overline{\text{DEW}}$	I	Pin ㊼ of IC501 on CO-2P board	Normally: "H" ("L" when dew)
BATT DOWN	I	Pin ㊽ of IC501 on CO-2P board	Main battery voltage (CAM UNREG) is divided by RV551 (battery down adjustment) and input. For detecting battery end/pre-end.
STILL ADJ	I	Pin ㊾ of IC501 on CO-2P board	DC voltage set by RV552 (STILL adjustment) on the CV-9 board is input.
CLOG	I	Pin (57) of IC501 on CO-2P board	Normal playback: "L" ("H" when PB RF signal is not reproduced due to head clog, etc..
PB SP/$\overline{\text{LP}}$	I	Pin (59) of IC501 on CO-2P board	Recording speed mode detection signal in FF, REW, CUE or REVIEW mode ("H" in SP mode, "L" in LP mode)
$\overline{\text{VTR P SW}}$	I	Pin (70) of IC501 on CO-2P board	"Normally: "H" ("L" when power switch (S501 on the VK-3P board) is set to video position.)

3-9-8. Mode/Mechanism Control — Mechanism Block Interface

<table>
<tr><th>Signal</th><th>I/O</th><th>Pin No.</th><th>I/O Level</th></tr>
<tr><td>S REEL FG</td><td>I</td><td>Pin ③ of CN001 on CC-26P board</td><td>Pulse (Approx. 4 Vp-p) that is generated by S-reel rotation.
It is approx. 1 sec period in REC/PB (SP) mode.</td></tr>
<tr><td>MODE SW 2</td><td>I</td><td>Pin ④ of CN001 on CC-26P board</td><td rowspan="4">Pins are connected to mode switch for mechanical position detection.
<table>
<tr><th></th><th>EJECTED</th><th>THREADING UNTHREADING</th><th>STOP</th><th>REC/PB/FF/ REW/CUE/ REVIEW/PAUSE</th></tr>
<tr><td>MODE SW 2 (④−⑦)</td><td>○</td><td>○</td><td>×</td><td>○</td></tr>
<tr><td>MODE SW 1 (⑤−⑦)</td><td>×</td><td>○</td><td>○</td><td>×</td></tr>
<tr><td>MODE SW 0 (⑥−⑦)</td><td>×</td><td>×</td><td>○</td><td>○</td></tr>
</table>
×……Open
○……Short</td></tr>
<tr><td>MODE SW 1</td><td>I</td><td>Pin ⑤ of CN001 on CC-26P board</td></tr>
<tr><td>MODE SW 0</td><td>I</td><td>Pin ⑥ of CN001 on CC-26P board</td></tr>
<tr><td>$\overline{\text{M OUT 0}}$ (COM)</td><td>O</td><td>Pin ⑦ of CN001 on CC-26P board</td></tr>
<tr><td>CC DOWN</td><td>I</td><td>Pin ⑧ of CN001 on CC-26P board</td><td rowspan="2">It is connected to cassette compartment down detection (CC DOWN) switch.
When cassette compartment comes down, connection between Pins ⑧ and ⑦ are short-circuited.
When cassette compartment comes up, connection between Pins ⑧ and ⑦ is open.</td></tr>
<tr><td>$\overline{\text{MOUT 0}}$ (COM)</td><td>O</td><td>Pin ⑦ of CN001 on CC-26P board</td></tr>
<tr><td>END SENS</td><td>I</td><td>Pin ⑩ of CN001 on CC-26P board</td><td>Normally: “L” (“H” pulse is output in tape end or cassette unloaded)</td></tr>
<tr><td>13/10</td><td>I</td><td>Pin ⑪ of CN001 on CC-26P board</td><td>Not used</td></tr>
<tr><td>TOP END LED</td><td>O</td><td>Pin ⑤ of CN002 on CC-26P board</td><td>“L” pulse (approx. 1 Vp-p)
(pulse period is changed from 12 to 170 msec according to operation mode.)</td></tr>
<tr><td>TOP SENS</td><td>I</td><td>Pin ⑦ of CN002 on CC-26P board</td><td>Normally: “L” (“H” pulse is output in tape top or cassette unloaded)</td></tr>
<tr><td>ME/$\overline{\text{MP}}$</td><td>I</td><td>Pin ② of CN002 on CC-26P board</td><td>“L” in MP tape (“H” pulse (20 msec period) in cassette unloaded)</td></tr>
<tr><td>REC PROOF</td><td>I</td><td>Pin ④ of CN002 on CC-26P board</td><td>“L” when recording possible cassette is loaded.
“H” pulse (20 msec period) is output, when recording inhibiting cassette is loaded.</td></tr>
<tr><td>T REEL FG</td><td>I</td><td>Pin ⑨ of CN002 on CC-26P board</td><td>Pulse (Approx. 4 Vp-p) that is generated by T-reel rotation, in REC/PB (SP) mode, it is approx. 1 sec period.</td></tr>
</table>

3-9-9. DDS Microcomputer (IC651 on CK-8P Board) — Peripheral Circuit Interface

PIN No.	Signal Name	I/O	Function and I/O Level
1	CMI 0	I	Key matrix input signal. Normally "H". When key input, "L" pulse for 18 ms (VTR mode) or 1V period (camera mode).
2	CMI 1	I	
3	CMI 2	I	
4	CMI 3	I	
5	$\overline{\mathrm{CMO\ 0}}$	O	Key matrix output signal. "L" pulse for 18 ms (VTR mode) or 1V period (camera mode).
6	$\overline{\mathrm{CMO\ 1}}$	O	
7	$\overline{\mathrm{CMO\ 2}}$	O	
8	$\overline{\mathrm{CMO\ 3}}$	O	
15	RESET	I	Normally "L".
16	CL 1	I	System clock oscillation pin. • Video power ON or camera power ON Continuous oscillation (oscillation frequency approx. 320 kHz) • Power OFF or backed up by lithium battery 500 ms intermittent oscillation (oscillation frequency approx. 70 kHz)
18	CL 2	O	
19	INT 1	I	Interrupt input by camera VD. VTR mode: "H" Camera mode: 1V period "H" pulse
21	$\overline{\mathrm{DDS\ SCK}}$	I/O	Serial communication·serial clock I/O. V period "L" pulse train.
22	DDS SO	O	Serial communication·data output. V period "H" pulse train.
24	DDS SI	I	Serial communication·data input. V period "L" pulse train.
25	CG BUSY	I	Busy signal input from character generator. V period "H" pulse train.
26	VTR PWR	I	SS 5V power detection. "H" while power ON.
27	LI PE	I	Lithium battery pre-end detection. Normally "H". "L" when lithium battery voltage drops.
28	$\overline{\mathrm{TEST}}$	I	Test mode input. Normally "H".
29	CG STB	O	Strobe signal for character generator. 1V period "H" pulse train.
30	$\overline{\mathrm{COSMO\ CS}}$	O	Chip select signal to servo/system control microcomputer (IC501 on CO-2P board). 1V period "L" pulse.
31	$\overline{\mathrm{EVR\ CS}}$	O	Chip select signal to EVR microcomputer (IC601 on CV-9 board). 1V period "L" pulse.
32	CMO 4	O	Key matrix output signal. "H" pulse for 18 ms (VTR mode) or 1V period (camera mode).
34	TITLE CS	O	Chip select signal to title controller (IC902 on LI-10 board). VTR mode: "L" Camera mode: 1V period "H" pulse.
35	SRAM CS	O	Chip select signal to static RAM (IC903 on LI-10 board). VTR mode: "L" Camera mode: Normally "L". "H" during title operation.
36	TG STB	O	Strobe signal to timing generator (CV-9 board, DT-79 board). Camera mode: 1V period "H" pulse. VTR mode: "L"
38	X1		Crystal oscillation circuit for clock. Oscillation frequency of 32.768 kHz.
39	X2		

3-9-10. EVR Microcomputer (IC601 on CV-9 Board) — Peripheral Circuit Interface

PIN No.	Signal Name	I/O	Function and I/O Level
1	–		–
2	DA SSW	O	"H" only during communication with serial switching D/A converter. V period "H" pulse.
3	$\overline{\text{EVR SCLK}}$	O	Serial clock output. V period "L" pulse train.
4	EVR SI	I	Serial data input. V period "H" pulse train.
5	EVR SO	O	Serial data output. V period "L" pulse train.
6	$\overline{\text{EVR CS}}$	I	Communication request from DDS. V period "L" pulse.
7	L IN	I	LINCS input. L: 0, H: 1. V period "H" pulse train.
8	L OUT	O	LINCS output. L: 0, H: 1. V period "H" pulse train.
9	$\overline{\text{CAM ADJ}}$	I	Normal/Adjust selection. Normally "H". "L" during adjustment.
10	NC	–	NC
11	DDS SSW	O	DDS serial selection. V period "L" pulse.
12, 13	LD	O	Data load instruction to EVR (IC608, IC609). V period "H" pulse.
14	BL	–	"L" for back light compensation ON.
15	IN/OUT	I	Indoors/outdoors mode discrimination input. "H": indoors, "L": outdoors.
16	–		
17	Vpp		EEPROM write voltage supply: connected to GND.
18			GND
19	–	–	
20	PAL/$\overline{\text{NTSC}}$	I	Broadcast system selection. L: NTSC, H: PAL.
21	GND		–
22	GND		–
23	GND		–
24, 25	GND		–
26	GND	–	–
27	GND	–	–
28	CAM 5V	I	Camera power on monitoring. L: CAM OFF, H: CAM ON.
29	AW IN	I	AWB A/D timer stop. Pattern drive interrupt. Normally 2V period pulse.
30	AW ADJ	O	AWB preset data fetch. Normally "L". "H" during auto white balance adjustment.
31	–	–	NC
32	DPCS	–	–
33	–	–	–
34	S3SW	O	AWB measurement signal selection. 3V period "H" pulse.
35	S2SW	O	AWB measurement signal selection. 3V period "H" pulse.
36	DISCHG	O	Capacitor reset pulse for timer measurement lamp voltage generation. V period "H" pulse.
37	–	–	–
38	S1SW	O	AWB measurement signal selection. 3V period "H" pulse.
39	–	–	–
40	OSC2	O	Built-in inverter output for oscillation. Oscillation frequency: 4 MHz.
41	OSC1	I	Built-in inverter input for oscillation.
42	VDD		Connected to EVER 5V.
43	–		–
44	$\overline{\text{RESET}}$		Normally "H". "L" when reset.
45	$\overline{\text{IRQ}}$		Connected to $\overline{\text{EVR CS}}$ signal. V period "L" pulse.
46	–	–	EVER 5V
47	–	–	EVER 5V
48	$\overline{\text{A/D EN}}$	O	1-bit A/D converter operation ON/OFF output for titler. Normally "H". "L" for 7V period when title store button (S657 on CK-19P board) pressed.

3-9-11. AF Microcomputer (IC802 on CV-9 Board) — Peripheral Circuit Interface

PIN No.	Signal Name	I/O	Function and I/O Level
1	$\overline{\text{SS OUT}}$	O	EVR data read timing output (PD5 SS input). V period "L" pulse train.
2	IRIS IN/$\overline{\text{OUT}}$	O	Indoors/outdoors determination according to aperture value. "H" for indoors and "L" for outdoors.
3			
4			
5			
6	$\overline{\text{LOW CONTRAST}}$	O	Signal to DDS microcomputer (IC651 on CK-19P board). "L" when subject has low contrast.
7	–	–	
8			Not used.
9	–	–	
10	–	–	
11	$\overline{\text{ZOOM T}}$	O	Normally "H". "L" when zoom motor is rotated in telephoto direction by remote control.
12	$\overline{\text{ZOOM W}}$	O	Normally "H". "L" when zoom motor is rotated in wide angle direction by remote control.
13	Focus N	O	Normally "L". "H" when focus motor is rotated in close range direction.
14	–	–	
15	Focus ∞	O	Normally "L". "H" when focus motor is rotated in far range direction.
16	F SPD ϕ	O	Bit 0 (LSB) of focus motor speed control signal.
17	–	–	
18	F SPD1	O	Bit 1 of focus motor speed control signal.
19	F SPD2	O	Bit 2 of focus motor speed control signal.
20	–	–	
21	F SPD3	O	Bit 3 (MSB) of focus motor speed control signal.
22	–	–	
23	Vss	–	Connected to GND.
24	Vss	–	Connected to GND.
25	–	–	
26	$\overline{\text{Focus N}}$	I	"L" when focus ring is at close range edge.
27	–	–	
28	–	–	
29	–	–	
30	$\overline{\text{FOCUS ∞}}$	O	"L" when focus ring is at far range edge.
31	AF SSW	O	Timing output for bus selection. V period "H" pulse.
32	–	–	
33	DA STB	O	For AF D/A converter data latch. V period "H" pulse train.
34	PAL/$\overline{\text{NTSC}}$	I	NTSC/PAL selection.
35	–	–	
36	$\overline{\text{J STB}}$	O	For external display jig data latch. V period "L" pulse.
37	XCS	O	Active "L" for communication request to IC801 CXD-1204. V period "L" pulse.
38	TEST	–	Connected to VDD.
39	–	–	
40	MODE		Connected to VDD.
41	MISO	I/O	SPI Master: in, Slave: out. V period "H" pulse train.
42	MOSI	I/O	SPI Master: out, Slave: in. V period "L" pulse train.
43	$\overline{\text{SCK}}$	I/O	SPI serial clock. V period "L" pulse train.
44	–	–	
45	$\overline{\text{SS}}$	I	V period "L" pulse train.
46	–	–	

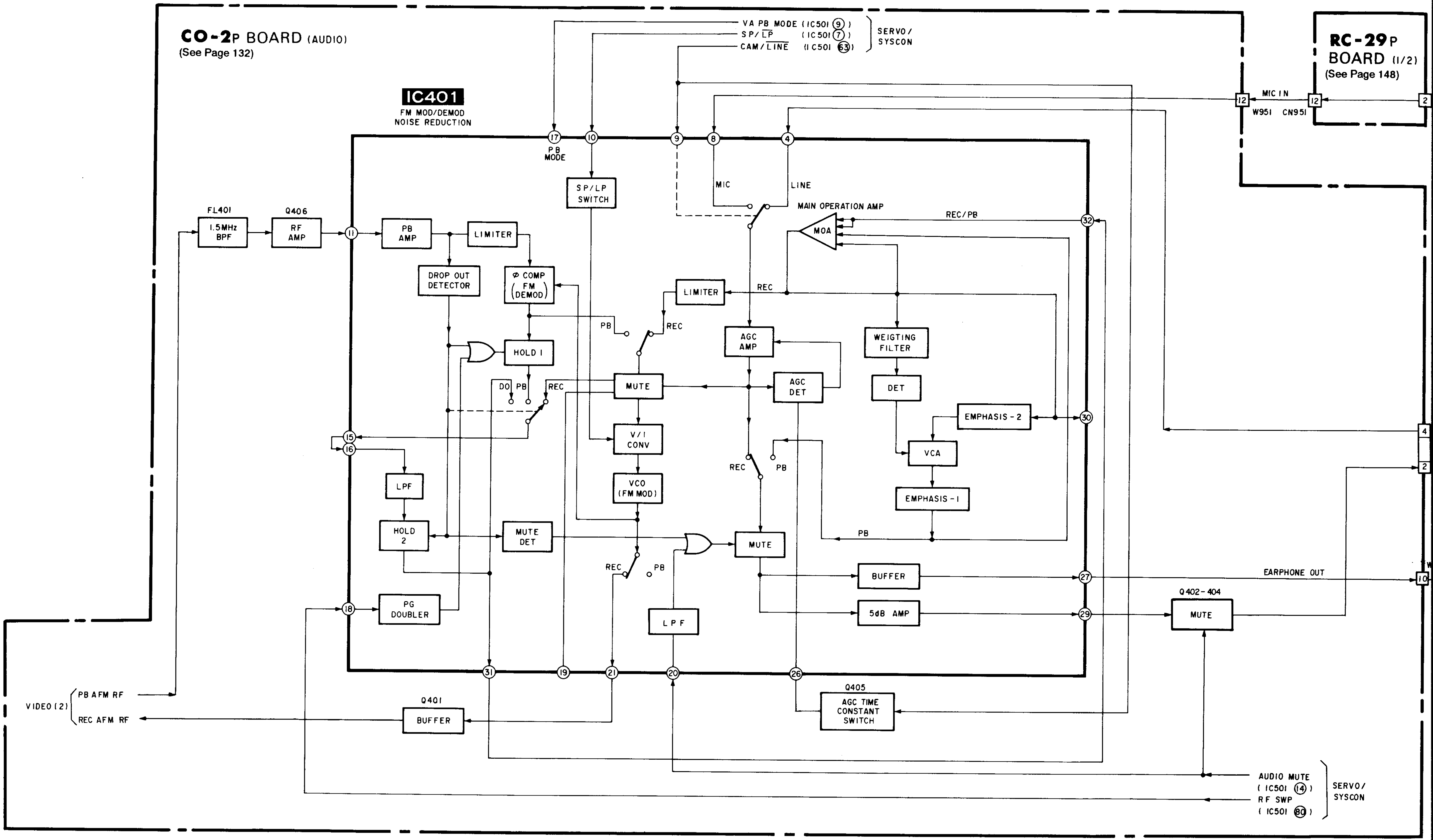
PIN No.	Sig
48	$\overline{\text{EVR CS}}$
49	–
50	–
51	$\overline{\text{Focus F}}$
52	CLK OU
53	–
54	CLK IN
55	VDD
56	–
57	–
58	–
59	–
60	$\overline{\text{SYS RS}}$
61	AREA
62	Vpp
63	WND W
64	–

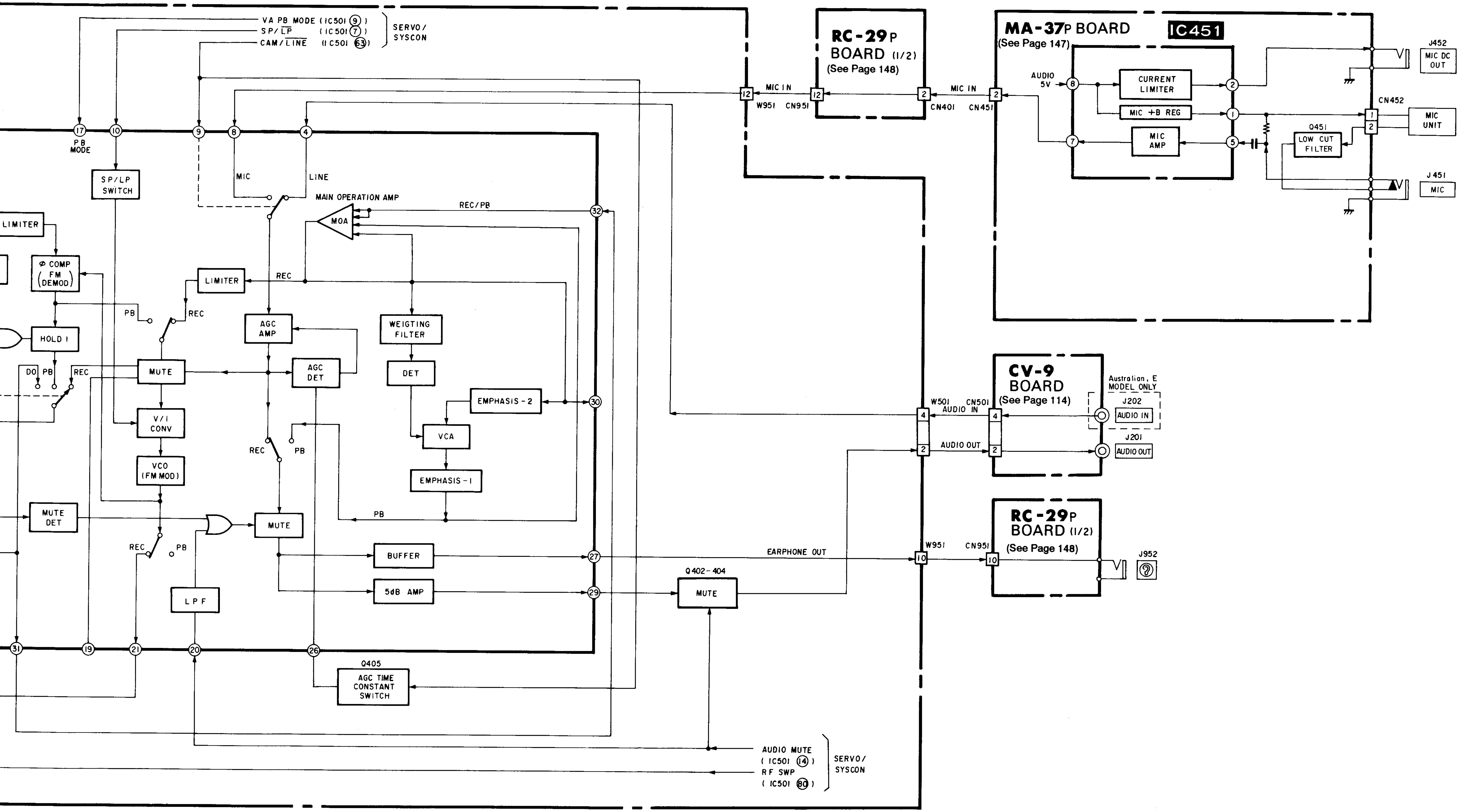
3-9-11. AF Microcomputer (IC802 on CV-9 Board) — Peripheral Circuit Interface

PIN No.	Signal Name	I/O	Function and I/O Level
1	$\overline{\text{SS}}$ OUT	O	EVR data read timing output (PD5 SS input). V period "L" pulse train.
2	IRIS IN/$\overline{\text{OUT}}$	O	Indoors/outdoors determination according to aperture value. "H" for indoors and "L" for outdoors.
3			
4			
5			
6	$\overline{\text{LOW CONTRAST}}$	O	Signal to DDS microcomputer (IC651 on CK-19P board). "L" when subject has low contrast.
7	–	–	
8			Not used.
9	–	–	
10	–	–	
11	$\overline{\text{ZOOM T}}$	O	Normally "H". "L" when zoom motor is rotated in telephoto direction by remote control.
12	$\overline{\text{ZOOM W}}$	O	Normally "H". "L" when zoom motor is rotated in wide angle direction by remote control.
13	Focus N	O	Normally "L". "H" when focus motor is rotated in close range direction.
14	–	–	
15	Focus ∞	O	Normally "L". "H" when focus motor is rotated in far range direction.
16	F SPD ϕ	O	Bit 0 (LSB) of focus motor speed control signal.
17	–	–	
18	F SPD1	O	Bit 1 of focus motor speed control signal.
19	F SPD2	O	Bit 2 of focus motor speed control signal.
20	–	–	
21	F SPD3	O	Bit 3 (MSB) of focus motor speed control signal.
22	–	–	
23	Vss	–	Connected to GND.
24	Vss	–	Connected to GND.
25	–	–	
26	$\overline{\text{Focus N}}$	I	"L" when focus ring is at close range edge.
27	–	–	
28	–	–	
29	–	–	
30	$\overline{\text{FOCUS ∞}}$	O	"L" when focus ring is at far range edge.
31	AF SSW	O	Timing output for bus selection. V period "H" pulse.
32	–	–	
33	DA STB	O	For AF D/A converter data latch. V period "H" pulse train.
34	PAL/$\overline{\text{NTSC}}$	I	NTSC/PAL selection.
35	–	–	
36	$\overline{\text{J STB}}$	O	For external display jig data latch. V period "L" pulse.
37	XCS	O	Active "L" for communication request to IC801 CXD-1204. V period "L" pulse.
38	TEST	–	Connected to VDD.
39	–	–	
40	MODE		Connected to VDD.
41	MISO	I/O	SPI Master: in, Slave: out. V period "H" pulse train.
42	MOSI	I/O	SPI Master: out, Slave: in. V period "L" pulse train.
43	$\overline{\text{SCK}}$	I/O	SPI serial clock. V period "L" pulse train.
44	–	–	
45	$\overline{\text{SS}}$	I	V period "L" pulse train.
46	–	–	

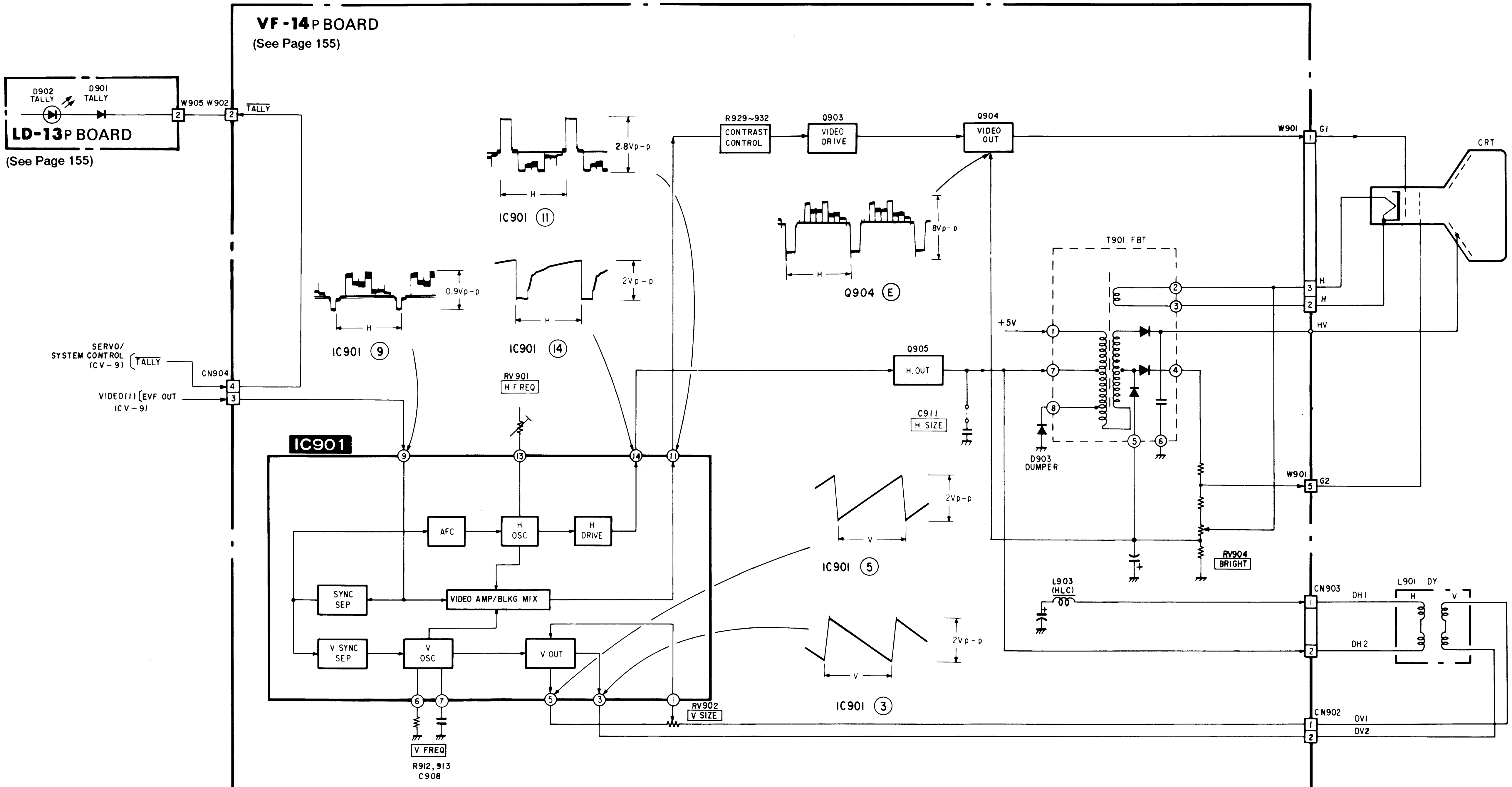
PIN No.	Signal Name	I/O	Function and I/O Level
48	$\overline{\text{EVR CS}}$	I	"L" for EVR data communication request from DDS microcomputer. V period "L" pulse.
49	–	–	
50	–	–	
51	$\overline{\text{Focus FG}}$	I	Interrupt generation at falling edge of focus motor FG. "H" when auto focus OFF. When auto focus ON, "L" pulse with period according to rotational speed of focus motor.
52	CLK OUT	O	Waveform shaped output of Pin (54) clock. (1.79 MHz)
53	–	–	
54	CLK IN	I	External clock input. 14.3 MHz clock input to Pin ㉘ of IC801 is divided to 1/8 and input.
55	VDD		CAM 4.9V
56	–	–	
57	–	–	
58	–	–	
59	–	–	
60	$\overline{\text{SYS RST}}$	I	Normally "H". "L" when reset.
61	AREA	I	Interrupt generation at falling edge from CXD-1204 (IC801). V period pulse.
62	Vpp		CAM 4.9V
63	WND W/$\overline{\text{N}}$	I	Auto focus range area selection. Connected to VDD by 100 kΩ (fixed at wide range side).
64	–	–	

3-10. AUDIO BLOCK DIAGRAM

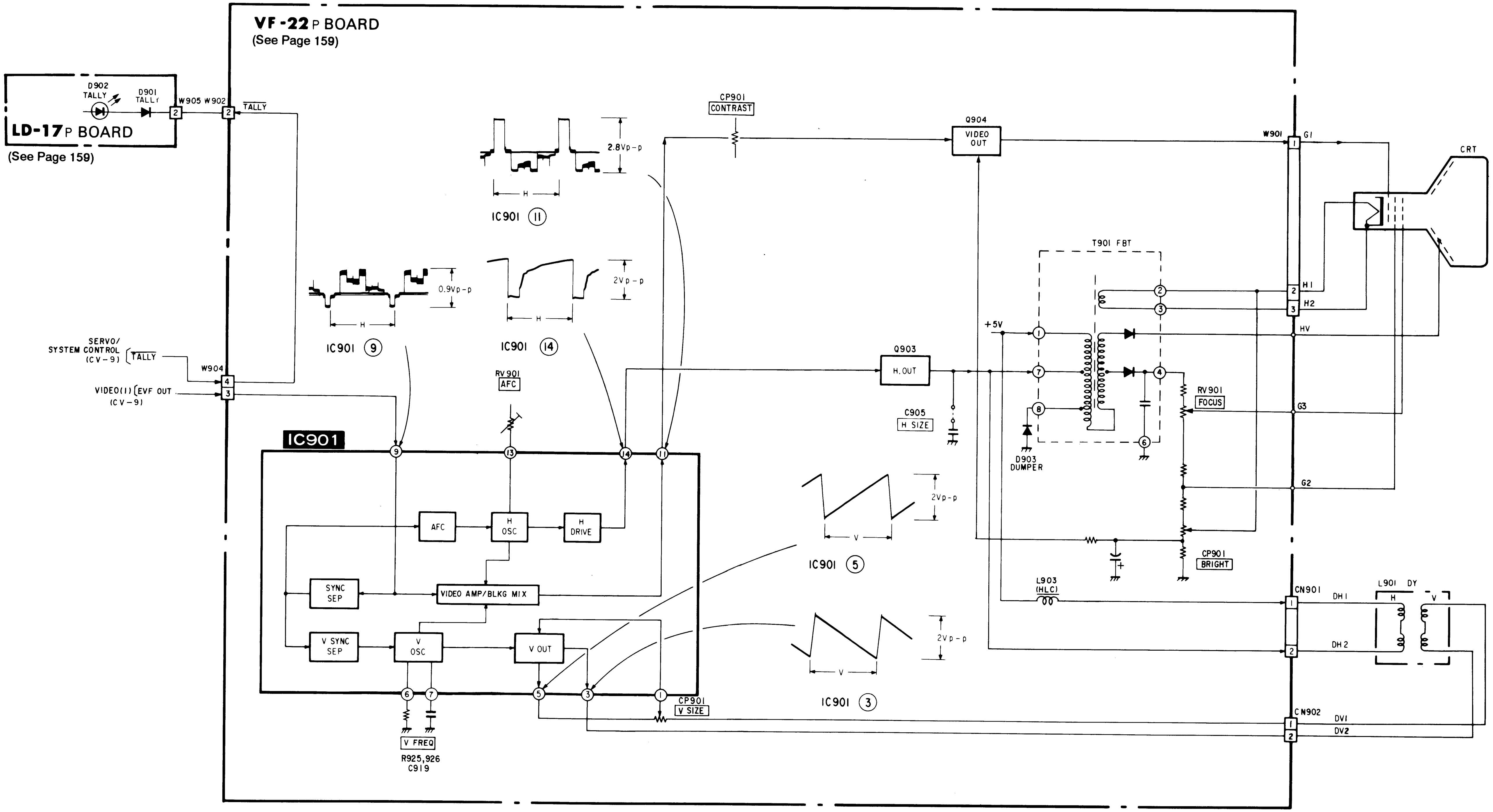

CO-2P BOARD (AUDIO)
(See Page 132)
IC401
FM MOD/DEMOD
NOISE REDUCTION
VA PB MODE (IC501 ⑨)
SP/LP (IC501 ⑦)
CAM/LINE (IC501 (63))
SERVO/
SYSCON
RC-29P
BOARD (1/2)
(See Page 148)
MIC IN
W951
CN951
PB
MODE
SP/LP
SWITCH
MIC
LINE
MAIN OPERATION AMP
REC/PB
MOA
FL401
1.5MHz
BPF
Q406
RF
AMP
PB
AMP
LIMITER
DROP OUT
DETECTOR
φ COMP
FM
DEMOD
HOLD I
LIMITER
REC
PB
REC
AGC
AMP
AGC
DET
WEIGTING
FILTER
DET
EMPHASIS - 2
VCA
EMPHASIS - I
DO
PB
REC
MUTE
V/I
CONV
VCO
(FM MOD)
REC
PB
LPF
HOLD
2
MUTE
DET
MUTE
REC
PB
BUFFER
5dB AMP
EARPHONE OUT
Q402-404
MUTE
PG
DOUBLER
LPF
Q405
AGC TIME
CONSTANT
SWITCH
Q401
BUFFER
VIDEO (2)
PB AFM RF
REC AFM RF
AUDIO MUTE
(IC501 ⑭)
RF SWP
(IC501 (80))
SERVO/
SYSCON


VA PB MODE (IC501 ⑨)
SP/LP (IC501 ⑦)
CAM/LINE (IC501 ㊸)
SERVO/
SYSCON
PB
MODE
SP/LP
SWITCH
MIC
LINE
MAIN OPERATION AMP
MOA
REC/PB
LIMITER
Φ COMP
(FM DEMOD)
LIMITER
REC
PB
REC
HOLD I
DO
PB
REC
MUTE
AGC
AMP
AGC
DET
WEIGTING
FILTER
DET
EMPHASIS-2
VCA
EMPHASIS-I
V/I
CONV
VCO
(FM MOD)
REC
PB
MUTE
DET
MUTE
PB
REC
PB
BUFFER
5dB AMP
LPF
Q405
AGC TIME
CONSTANT
SWITCH
Q402-404
MUTE
EARPHONE OUT
AUDIO MUTE
(IC501 ⑭)
RF SWP
(IC501 ⑧0)
SERVO/
SYSCON
RC-29P
BOARD (1/2)
(See Page 148)
MIC IN
W951
CN951
MIC IN
CN401
CN451
MA-37P BOARD
(See Page 147)
IC451
AUDIO
5V
CURRENT
LIMITER
MIC +B REG
MIC
AMP
Q451
LOW CUT
FILTER
CN452
J452
MIC DC
OUT
MIC
UNIT
J451
MIC
CV-9
BOARD
(See Page 114)
W501
CN501
AUDIO IN
AUDIO OUT
Australian, E
MODEL ONLY
J202
AUDIO IN
J201
AUDIO OUT
RC-29P
BOARD (1/2)
(See Page 148)
W951
CN951
J952
17
10
9
8
4
32
30
27
29
31
19
21
20
26
12
2
1
5
7

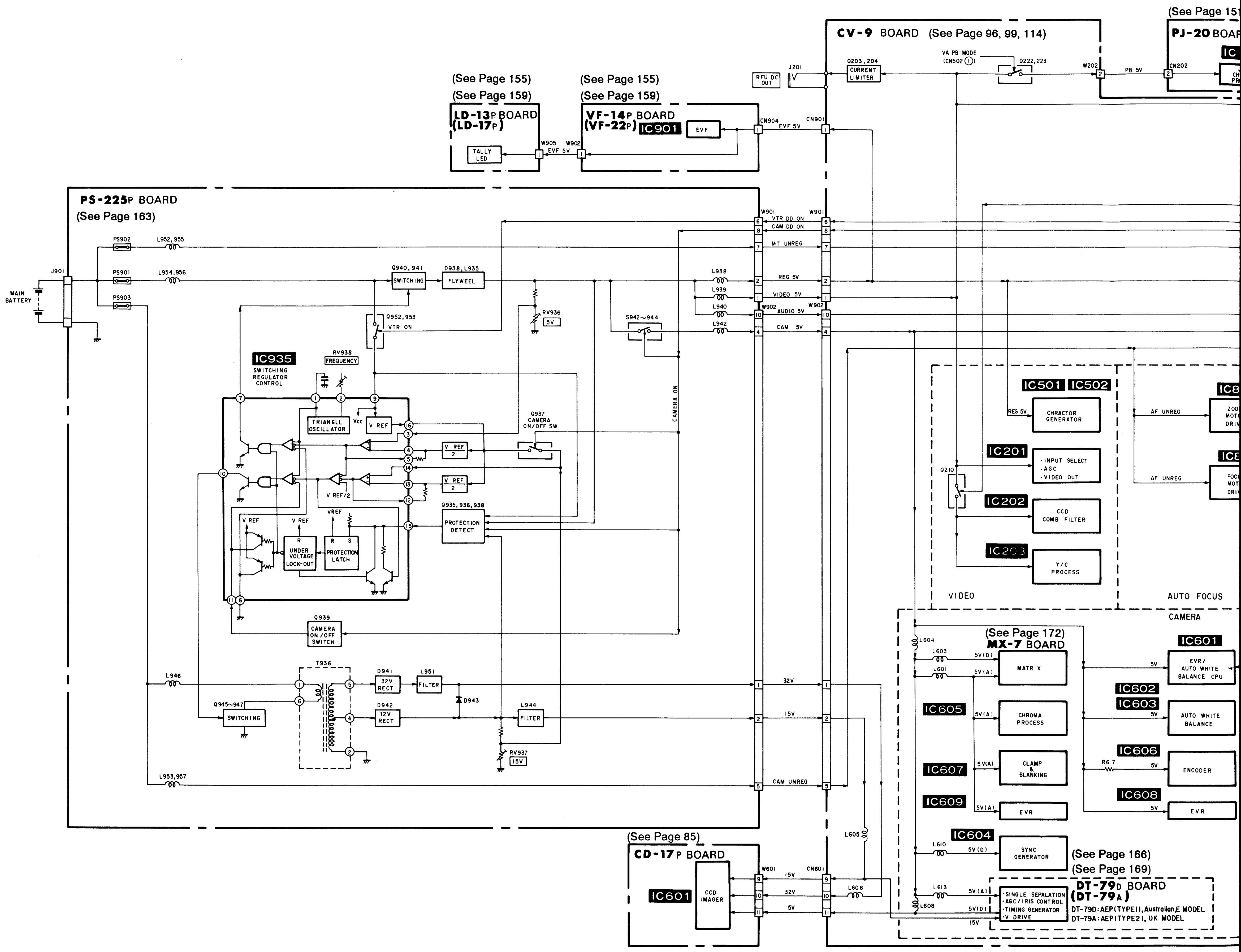
3-11. VIEW FINDER BLOCK DIAGRAM

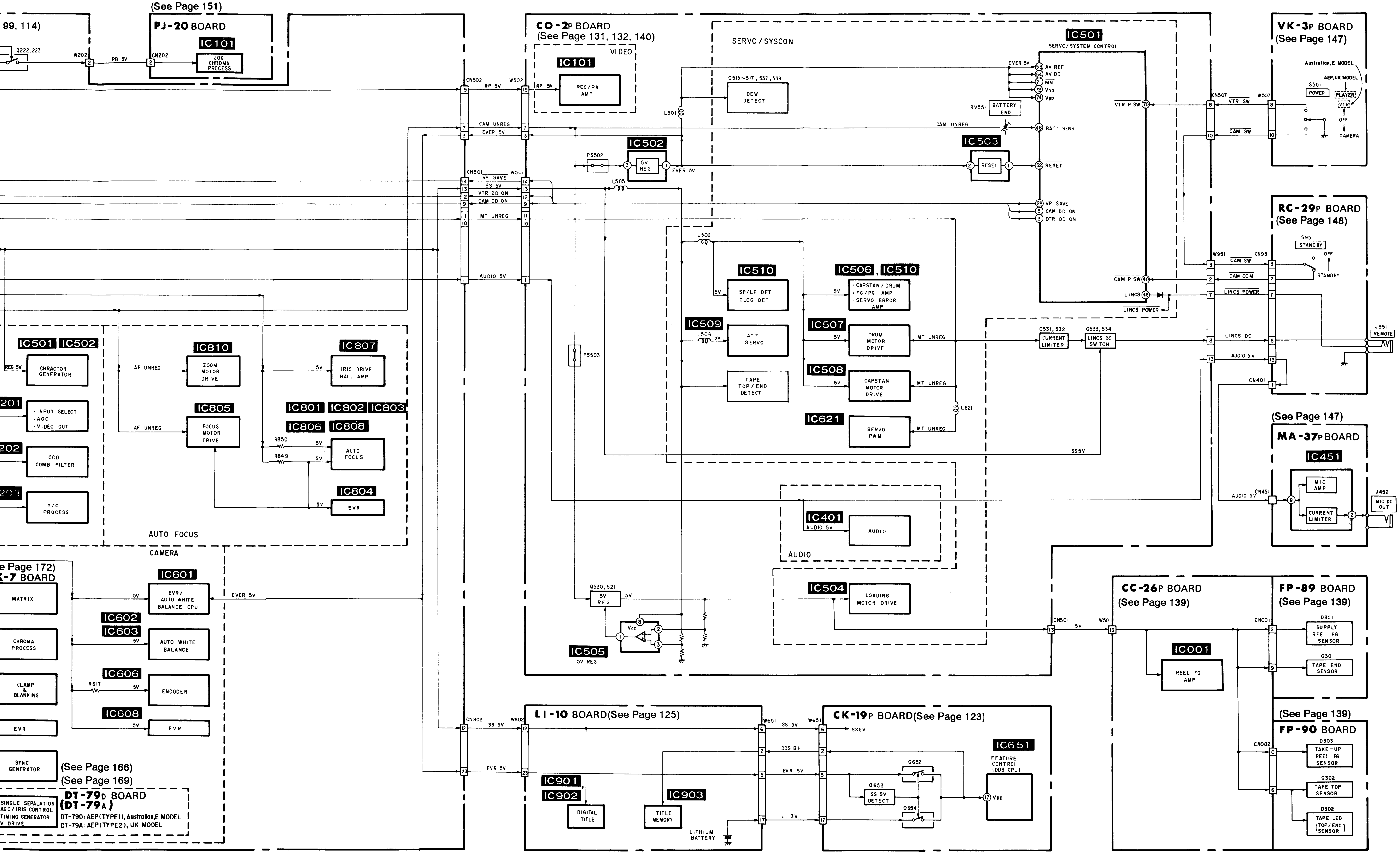

VF-14P BOARD
(See Page 155)
LD-13P BOARD
(See Page 155)
D902 TALLY
D901 TALLY
W905 W902
TALLY
SERVO/ SYSTEM CONTROL (CV-9)
TALLY
CN904
VIDEO(1) (EVF OUT (CV-9)
IC901
AFC
H OSC
H DRIVE
SYNC SEP
VIDEO AMP/BLKG MIX
V SYNC SEP
V OSC
V OUT
RV901 H FREQ
RV902 V SIZE
V FREQ
R912, 913 C908
2.8Vp-p
IC901 ⑪
0.9Vp-p
IC901 ⑨
2Vp-p
IC901 ⑭
8Vp-p
Q904 Ⓔ
IC901 ⑤
IC901 ③
R929~932 CONTRAST CONTROL
Q903 VIDEO DRIVE
Q904 VIDEO OUT
Q905 H.OUT
C911 H SIZE
T901 FBT
+5V
D903 DUMPER
RV904 BRIGHT
L903 (HLC)
W901
G1
H
HV
G2
CRT
CN903
DH1
DH2
L901 DY
V
CN902
DV1
DV2

D902 TALLY
LD-17P BOA
(See Page 159)
SERV
SYSTEM CONTR
(CV-
VIDE


VF-22P BOARD
(See Page 159)
LD-17P BOARD
(See Page 159)
D902 TALLY
D901 TALLY
W905 W902
TALLY
SERVO/ SYSTEM CONTROL (CV-9)
TALLY
W904
VIDEO(1) (EVF OUT (CV-9)
2.8Vp-p
H
IC901 ⑪
0.9Vp-p
IC901 ⑨
2Vp-p
IC901 ⑭
RV901 AFC
IC901
AFC
H OSC
H DRIVE
SYNC SEP
VIDEO AMP/BLKG MIX
V SYNC SEP
V OSC
V OUT
V FREQ
R925,926 C919
CP901 V SIZE
CP901 CONTRAST
Q904 VIDEO OUT
Q903 H.OUT
C905 H SIZE
+5V
T901 FBT
D903 DUMPER
RV901 FOCUS
CP901 BRIGHT
L903 (HLC)
2Vp-p
V
IC901 ⑤
IC901 ③
W901
G1
H1
H2
HV
G3
G2
CRT
CN901
DH1
DH2
L901 DY
H
V
CN902
DV1
DV2

3-12. POWER BLOCK DIAGRAM

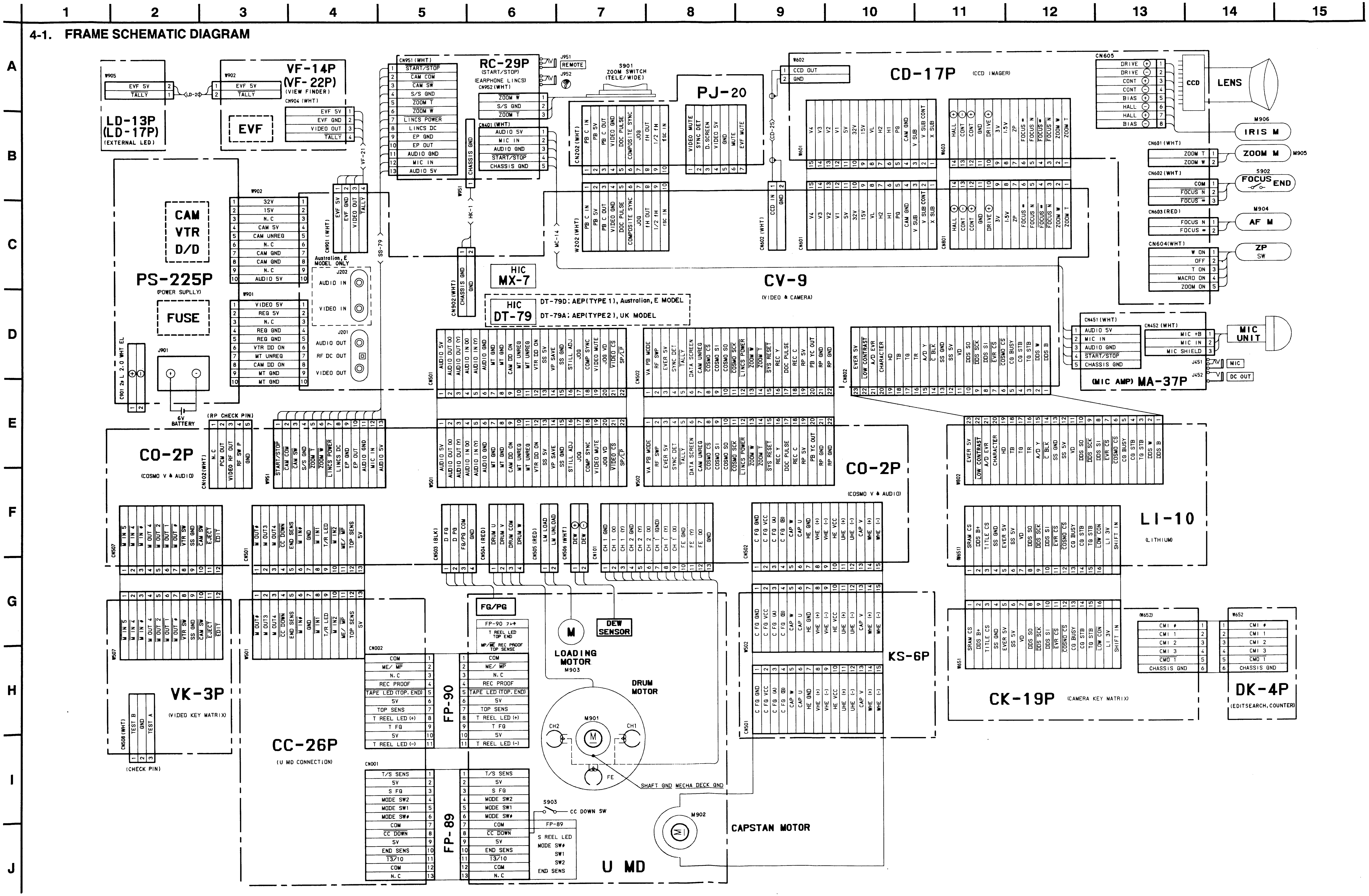

(See Page 15
PJ-20 BOAR
IC
CH
PR
CV-9 BOARD (See Page 96, 99, 114)
RFU DC OUT
J201
Q203, 204 CURRENT LIMITER
VA PB MODE (CN502 ①)
Q222, 223
W202
PB 5V
CN202
(See Page 155)
(See Page 159)
LD-13P BOARD
(LD-17P)
TALLY LED
W905
W902
EVF 5V
(See Page 155)
(See Page 159)
VF-14P BOARD
(VF-22P)
IC901
EVF
CN904
EVF 5V
CN901
PS-225P BOARD
(See Page 163)
W901
VTR DD ON
CAM DD ON
MT UNREG
REG 5V
VIDEO 5V
W902
AUDIO 5V
CAM 5V
PS902
L952, 955
PS901
L954, 956
PS903
J901
MAIN BATTERY
Q940, 941 SWITCHING
D938, L935 FLYWEEL
Q952, 953 VTR ON
RV936 5V
S942~944
L938
L939
L940
L942
IC935
SWITCHING REGULATOR CONTROL
RV938 FREQUENCY
TRIANGLE OSCILLATOR
Vcc
V REF
V REF 2
V REF/2
V REF 2
VREF
V REF
V REF
R
UNDER VOLTAGE LOCK-OUT
R S
PROTECTION LATCH
Q937 CAMERA ON/OFF SW
CAMERA ON
Q935, 936, 938 PROTECTION DETECT
Q939 CAMERA ON/OFF SWITCH
L946
T936
Q945~947 SWITCHING
D941 32V RECT
L951 FILTER
D943
D942 12V RECT
L944 FILTER
RV937 15V
32V
15V
L953, 957
CAM UNREG
IC501 IC502
REG 5V
CHRACTOR GENERATOR
IC201
· INPUT SELECT · AGC · VIDEO OUT
Q210
IC202
CCD COMB FILTER
IC203
Y/C PROCESS
VIDEO
AF UNREG
IC8
ZOO MOT DRIV
AF UNREG
IC8
FOCU MOT DRIV
AUTO FOCUS
CAMERA
L604
(See Page 172)
MX-7 BOARD
L603
5V(D)
L601
5V(A)
MATRIX
IC605
5V(A)
CHROMA PROCESS
IC607
5V(A)
CLAMP & BLANKING
IC609
5V(A)
EVR
IC601
5V
EVR/ AUTO WHITE BALANCE CPU
IC602
IC603
5V
AUTO WHITE BALANCE
IC606
R617
5V
ENCODER
IC608
5V
EVR
L605
IC604
L610
5V(D)
SYNC GENERATOR
(See Page 166)
(See Page 169)
(See Page 85)
CD-17P BOARD
IC601
CCD IMAGER
W601
CN601
15V
32V
5V
L606
L613
5V(A)
L608
5V(D)
15V
· SINGLE SEPALATION · AGC/IRIS CONTROL · TIMING GENERATOR · V DRIVE
DT-79D BOARD
(DT-79A)
DT-79D: AEP(TYPE1), Australian, E MODEL
DT-79A: AEP(TYPE2), UK MODEL


(See Page 151)
PJ-20 BOARD
IC101
JOG CHROMA PROCESS
99, 114)
Q222,223
W202
PB 5V
CN202
CO-2P BOARD
(See Page 131, 132, 140)
VIDEO
IC101
REC/PB AMP
RP 5V
CN502
W502
CAM UNREG
EVER 5V
CN501
W501
VP SAVE
SS 5V
VTR DD ON
CAM DD ON
MT UNREG
AUDIO 5V
SERVO/SYSCON
IC501
SERVO/SYSTEM CONTROL
Q515~517, 537, 538
DEW DETECT
L501
EVER 5V
AV REF
AV DD
MNI
VDD
VPP
RV551
BATTERY END
BATT SENS
PS502
IC502
5V REG
L505
IC503
RESET
VP SAVE
CAM DD ON
DTR DD ON
VTR P SW
CAM P SW
LINCS
LINCS POWER
L502
IC510
SP/LP DET CLOG DET
IC506, IC510
· CAPSTAN/DRUM · FG/PG AMP · SERVO ERROR AMP
IC509
L506
ATF SERVO
IC507
DRUM MOTOR DRIVE
TAPE TOP/END DETECT
IC508
CAPSTAN MOTOR DRIVE
IC621
SERVO PWM
L621
PS503
Q531, 532
CURRENT LIMITER
Q533, 534
LINCS DC SWITCH
SS5V
IC401
AUDIO 5V
AUDIO
IC504
LOADING MOTOR DRIVE
Q520, 521
5V REG
Vcc
IC505
5V REG
VK-3P BOARD
(See Page 147)
Australian, E MODEL
AEP, UK MODEL
S501
POWER
PLAYER
VTR
OFF
CAMERA
CN507
W507
VTR SW
CAM SW
RC-29P BOARD
(See Page 148)
S951
STANDBY
OFF
W951
CN951
CAM SW
CAM COM
LINCS POWER
LINCS DC
AUDIO 5V
CN401
J951
REMOTE
(See Page 147)
MA-37P BOARD
IC451
MIC AMP
CURRENT LIMITER
CN451
J452
MIC DC OUT
CC-26P BOARD
(See Page 139)
CN501
W501
IC001
REEL FG AMP
FP-89 BOARD
(See Page 139)
CN001
D301
SUPPLY REEL FG SENSOR
Q301
TAPE END SENSOR
(See Page 139)
FP-90 BOARD
CN002
D303
TAKE-UP REEL FG SENSOR
Q302
TAPE TOP SENSOR
D302
TAPE LED (TOP/END) SENSOR
IC501 IC502
CHRACTOR GENERATOR
REG 5V
201
· INPUT SELECT · AGC · VIDEO OUT
202
CCD COMB FILTER
203
Y/C PROCESS
AF UNREG
IC810
ZOOM MOTOR DRIVE
IC805
FOCUS MOTOR DRIVE
IC807
IRIS DRIVE HALL AMP
IC801 IC802 IC803
IC806 IC808
R850
R849
AUTO FOCUS
IC804
EVR
AUTO FOCUS
CAMERA
e Page 172)
-7 BOARD
MATRIX
CHROMA PROCESS
CLAMP & BLANKING
EVR
SYNC GENERATOR
IC601
EVR/ AUTO WHITE BALANCE CPU
IC602
IC603
AUTO WHITE BALANCE
IC606
R617
ENCODER
IC608
EVR
EVER 5V
(See Page 166)
(See Page 169)
DT-79D BOARD
(DT-79A)
SINGLE SEPALATION AGC/IRIS CONTROL TIMING GENERATOR V DRIVE
DT-79D: AEP(TYPE1), Australian, E MODEL
DT-79A: AEP(TYPE2), UK MODEL
CN802
W802
SS 5V
EVR 5V
LI-10 BOARD(See Page 125)
IC901, IC902
DIGITAL TITLE
IC903
TITLE MEMORY
LITHIUM BATTERY
W651
DDS B+
LI 3V
CK-19P BOARD(See Page 123)
SS5V
Q652
Q653
SS 5V DETECT
Q654
IC651
FEATURE CONTROL (DDS CPU)
VDD

SECTION 4

PRINTED WIRING BOARDS AND SCHEMATIC DIAGRAMS

4-1. FRAME SCHEMATIC DIAGRAM

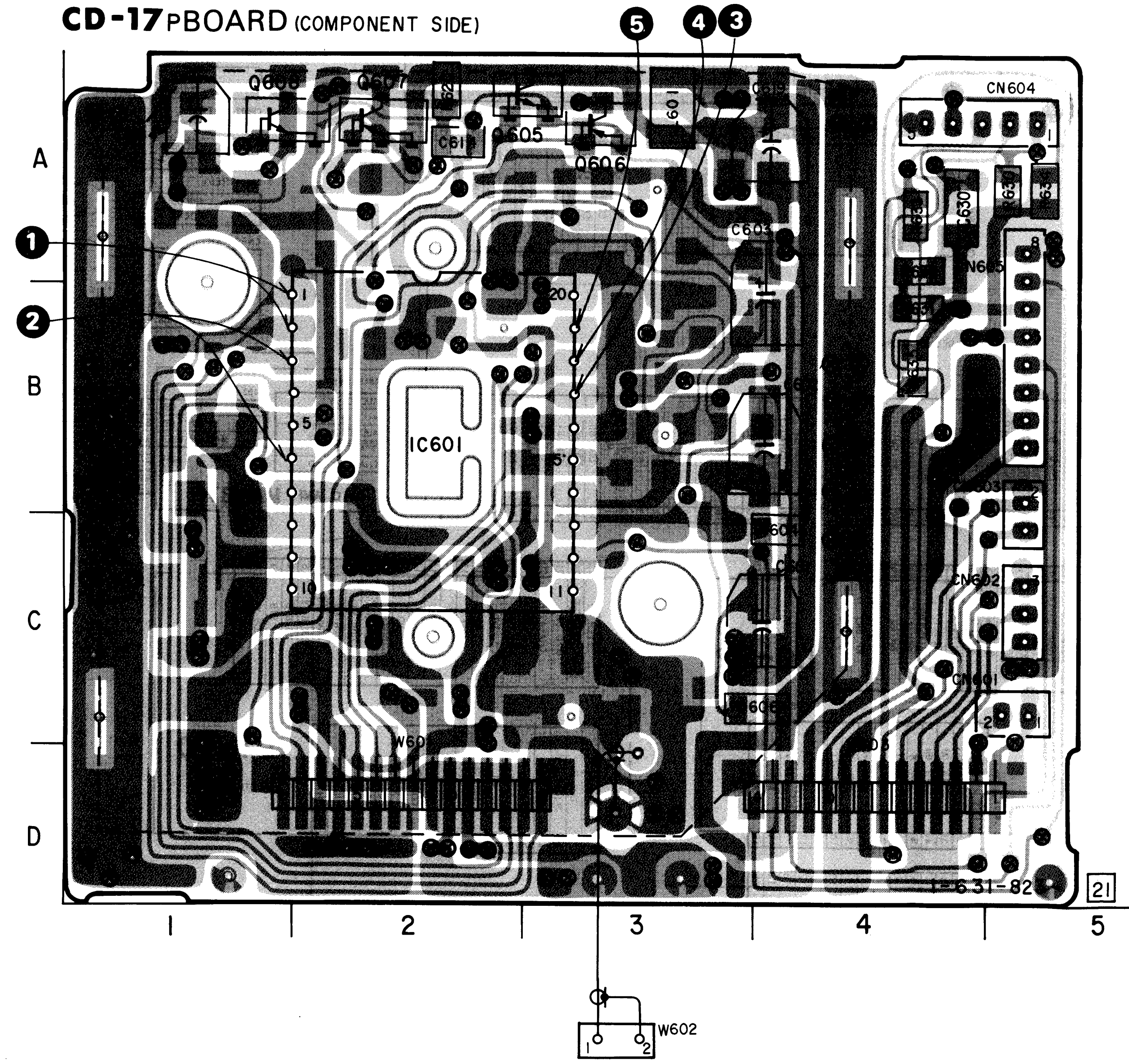

LD-13P (LD-17P) (EXTERNAL LED)
VF-14P (VF-22P) (VIEW FINDER)
EVF
RC-29P (START/STOP) (EARPHONE L INCS)
REMOTE
S901 ZOOM SWITCH (TELE/WIDE)
PJ-20
CD-17P (CCD IMAGER)
CCD
LENS
IRIS M
ZOOM M
FOCUS END
AF M
ZP SW
CAM VTR D/D
PS-225P (POWER SUPPLY)
FUSE
6V BATTERY
Australian, E MODEL ONLY
AUDIO IN
VIDEO IN
AUDIO OUT
RF DC OUT
VIDEO OUT
HIC MX-7
HIC DT-79
DT-79D: AEP(TYPE 1), Australian, E MODEL
DT-79A: AEP(TYPE 2), UK MODEL
CV-9 (VIDEO & CAMERA)
MIC UNIT
MIC
DC OUT
(MIC AMP) MA-37P
CO-2P (COSMO V & AUDIO)
LI-10 (LITHIUM)
FG/PG
DEW SENSOR
LOADING MOTOR M903
DRUM MOTOR M901
SHAFT GND MECHA DECK GND
KS-6P
VK-3P (VIDEO KEY MATRIX)
(CHECK PIN)
CC-26P (U MD CONNECTION)
FP-90
FP-89
S903 CC DOWN SW
CAPSTAN MOTOR M902
U MD
CK-19P (CAMERA KEY MATRIX)
DK-4P (EDITSEARCH, COUNTER)

4-2. PRINTED WIRING BOARDS AND SCHEMATIC DIAGRAMS

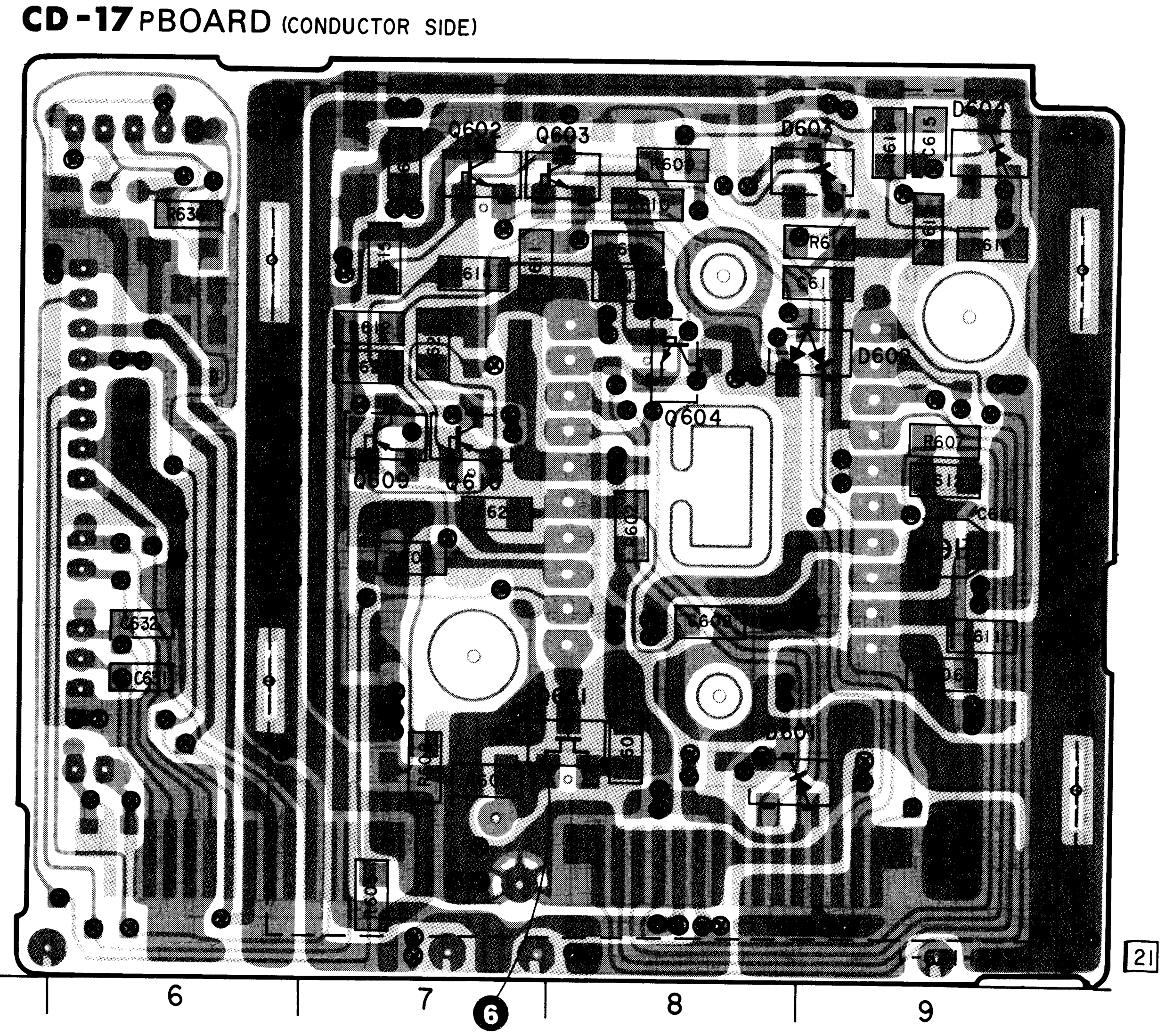
CD-17P (CCD IMAGER/ZOOM, FOCUS) PRINTED WIRING BOARDS

— Ref. No. CD-17P BOARD: 1000 series —

CD-17P BOARD (COMPONENT SIDE)


5
4
3
A
B
C
D
1
2
Q608
Q607
Q605
Q606
C619
C601
C603
CN604
CN603
CN602
CN601
IC601
W601
W602
1
5
10
11
20
1-631-82
21
1
2
3
4
5

CD-17P BOARD (CONDUCTOR SIDE)

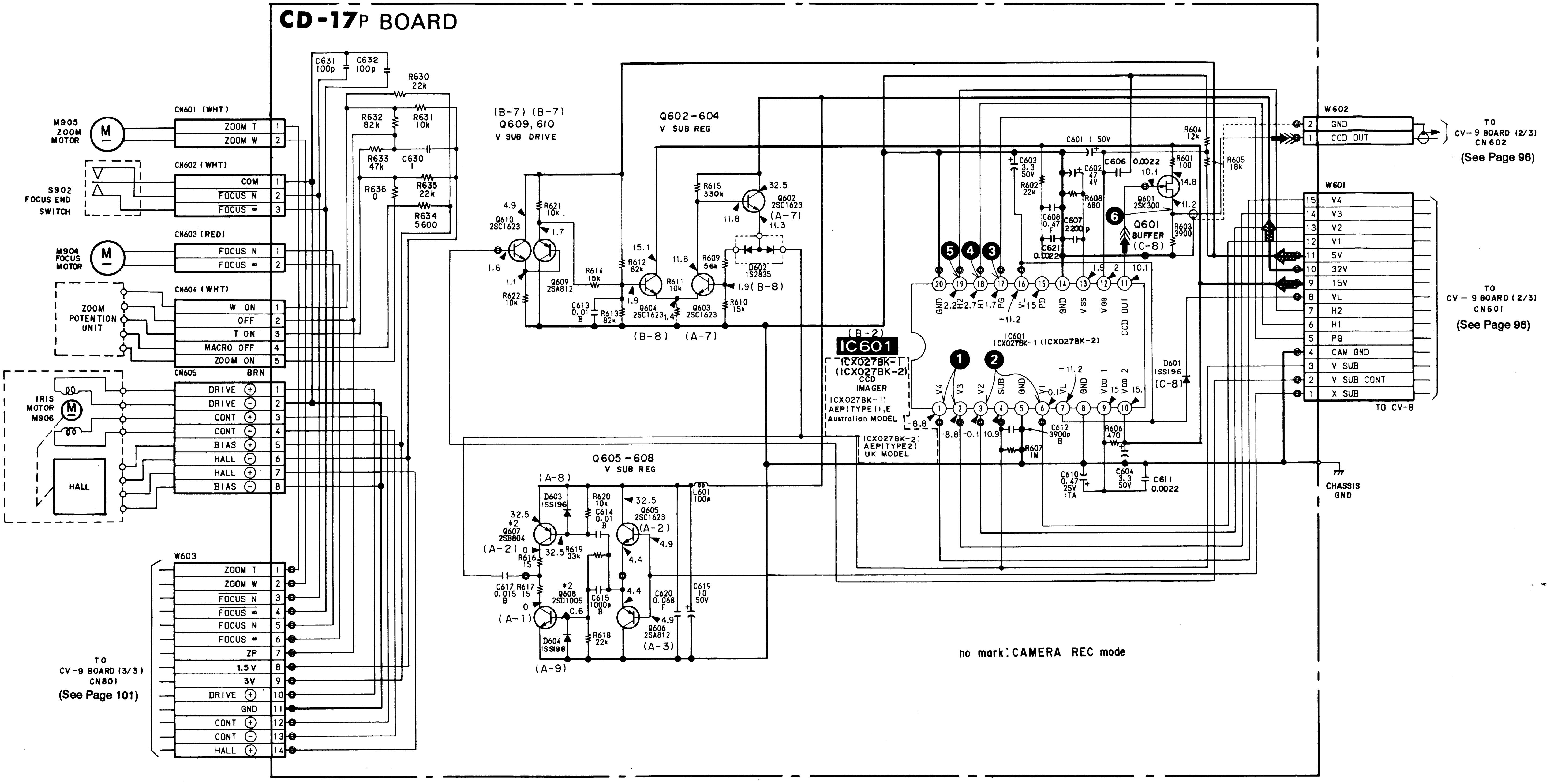

Q602
Q603
D603
D604
D602
Q604
Q609
Q610
D601
R634
R607
C632
C651
6
7
8
9
21

CAUTIONS FOR REPLACEMENT OF CCD IMAGER

- When you replaced the CCD imager adjust the whole camera assembly.
- CCD imager has such a structure that it may be destructed by static electricity, so handle it with a care similar for MOS IC.
  Further, be cartain that the light receiving part has no stick of dust and no entry of bright light.

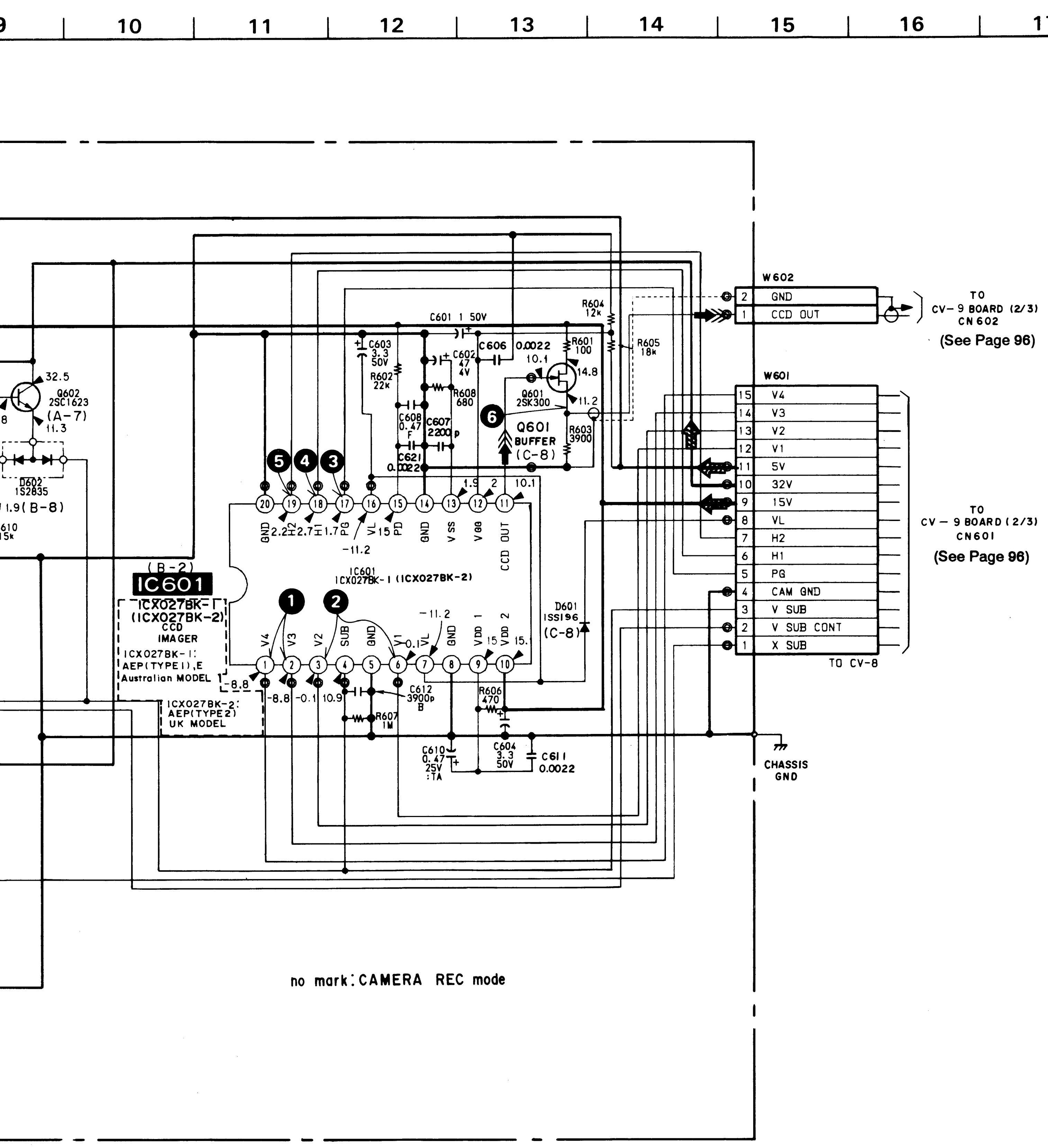
CD-17P (CCD IMAGER/ZOOM, FOCUS) SCHEMATIC DIAGRAMS

— Ref. No. CD-17P BOARD: 1000 series —


1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
17
A
B
C
D
E
F
G
H
I
CD-17P BOARD
M905 ZOOM MOTOR
CN601 (WHT)
ZOOM T
ZOOM W
S902 FOCUS END SWITCH
CN602 (WHT)
COM
FOCUS N
FOCUS ∞
M904 FOCUS MOTOR
CN603 (RED)
FOCUS N
FOCUS ∞
ZOOM POTENTION UNIT
CN604 (WHT)
W ON
OFF
T ON
MACRO OFF
ZOOM ON
CN605 BRN
IRIS MOTOR M906
HALL
DRIVE ⊕
DRIVE ⊖
CONT ⊕
CONT ⊖
BIAS ⊕
HALL ⊖
HALL ⊕
BIAS ⊖
W603
ZOOM T
ZOOM W
FOCUS N
FOCUS ∞
FOCUS N
FOCUS ∞
ZP
1.5V
3V
DRIVE ⊕
GND
CONT ⊕
CONT ⊖
HALL ⊕
TO CV-9 BOARD (3/3) CN801
(See Page 101)
C631 100p
C632 100p
R630 22k
R632 82k
R631 10k
R633 47k
C630 1
R636 0
R635 22k
R634 5600
(B-7) (B-7)
Q609, 610
V SUB DRIVE
Q610 2SC1623
Q609 2SA812
R621 10k
R614 15k
R622 10k
C613 0.01 B
R613 82k
Q602-604
V SUB REG
R615 330k
Q602 2SC1623
(A-7)
R612 82k
Q604 2SC1623
R611 10k
R609 56k
Q603 2SC1623
R610 15k
D602 1S2835
(B-8) (A-7)
1.9(B-8)
Q605-608
V SUB REG
(A-8)
D603 1SS196
R620 10k
C614 0.01 B
Q607 2SB804
Q605 2SC1623
(A-2)
R619 33k
R616 15
C617 0.015 B
R617 15
Q608 2SD1005
C615 1000p B
C620 0.068 F
C619 10 50V
L601 100μ
Q606 2SA812
(A-3)
(A-1)
D604 1SS196
R618 22k
(A-9)
(B-2)
IC601
ICX027BK-1 (ICX027BK-2)
CCD IMAGER
ICX027BK-1: AEP(TYPE1), E Australian MODEL
ICX027BK-2: AEP(TYPE2) UK MODEL
IC601 ICX027BK-1 (ICX027BK-2)
GND
H2
H1
PG
VL
PD
GND
VSS
Vφφ
CCD OUT
V4
V3
V2
SUB
GND
V1
VL
GND
VDD 1
VDD 2
C601 1 50V
C603 3.3 50V
R602 22k
C602 47 4V
C608 0.47 F
C607 2200p
C621 0.0022
R608 680
C606 0.0022
R601 100
Q601 2SK300
Q601 BUFFER (C-8)
R603 3900
R604 12k
R605 18k
C612 3900p B
R607 1M
R606 470
C610 0.47 25V :TA
C604 3.3 50V
C611 0.0022
D601 1SS196 (C-8)
W602
GND
CCD OUT
TO CV-9 BOARD (2/3) CN602
(See Page 96)
W601
V4
V3
V2
V1
5V
32V
15V
VL
H2
H1
PG
CAM GND
V SUB
V SUB CONT
X SUB
TO CV-8
TO CV-9 BOARD (2/3) CN601
(See Page 96)
CHASSIS GND
no mark : CAMERA REC mode

• **SIGNAL PATH**

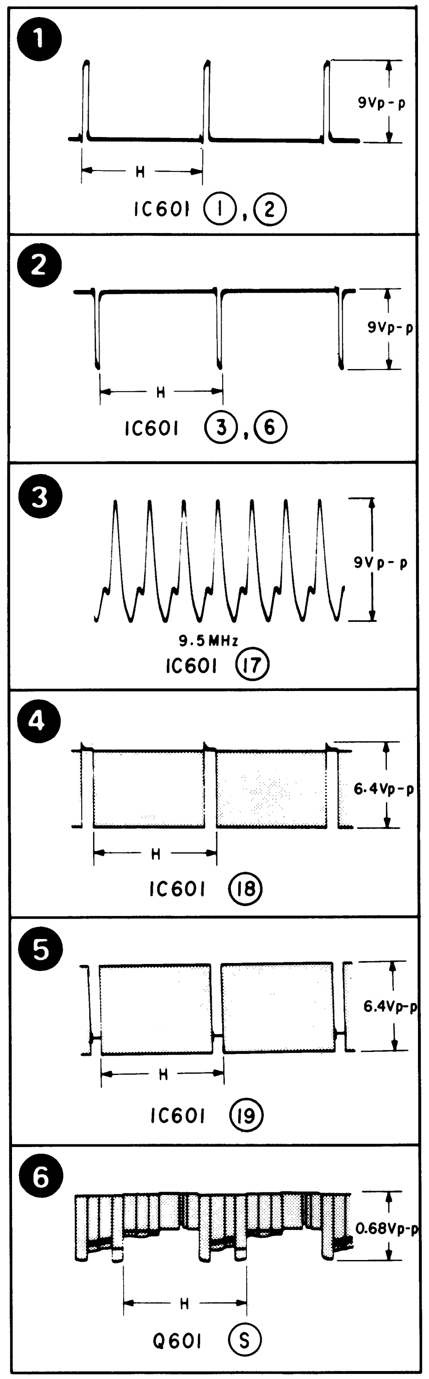
	VIDEO SIGNA		
	CHROMA	Y	Y/C
REC			
PB			



9
10
11
12
13
14
15
16
17
18
W602
2 GND
1 CCD OUT
TO CV-9 BOARD (2/3) CN602
(See Page 96)
W601
15 V4
14 V3
13 V2
12 V1
11 5V
10 32V
9 15V
8 VL
7 H2
6 H1
5 PG
4 CAM GND
3 V SUB
2 V SUB CONT
1 X SUB
TO CV-8
TO CV-9 BOARD (2/3) CN601
(See Page 96)
CHASSIS GND
Q602 2SC1623 (A-7)
32.5
11.3
D602 1S2835
1.9(B-8)
R604 12k
R605 18k
C601 1 50V
C603 3.3 50V
R602 22k
C602 47 4V
C606 0.0022
R601 100
10.1
14.8
11.2
R608 680
Q601 2SK300
C608 0.47 F
C607 2200p
C621 0.0022
Q601 BUFFER (C-8)
R603 3900
GND
H2
H1
PG
VL
PD
GND
VSS
VGG
CCD OUT
2.2
2.7
1.7
15
-11.2
1.9
2
10.1
(B-2)
IC601
ICX027BK-1 (ICX027BK-2)
CCD IMAGER
ICX027BK-1: AEP(TYPE1),E Australian MODEL
ICX027BK-2: AEP(TYPE2) UK MODEL
IC601 ICX027BK-1 (ICX027BK-2)
V4
V3
V2
SUB
GND
V1
VL
GND
VDD 1
VDD 2
-8.8
-8.8
-0.1
10.9
0.1
-11.2
15
15.
C612 3900p B
R607 1M
R606 470
D601 1SS196 (C-8)
C610 0.47 25V :TA
C604 3.3 50V
C611 0.0022

no mark: CAMERA REC mode

CD-17P BOARD



❶
9Vp-p
H
IC601 ①,②
❷
9Vp-p
H
IC601 ③,⑥
❸
9Vp-p
9.5MHz
IC601 ⑰
❹
6.4Vp-p
H
IC601 ⑱
❺
6.4Vp-p
H
IC601 ⑲
❻
0.68Vp-p
H
Q601 Ⓢ

- **SIGNAL PATH**

	VIDEO SIGNAL			AUDIO SIGNAL
	CHROMA	Y	Y/CHROMA/DATA	
REC			➡≫	
PB				

THIS NOTE IS COMMON FOR PRINTED WIRING BOARDS
(In addition to this , the necessary note is printed in each block.

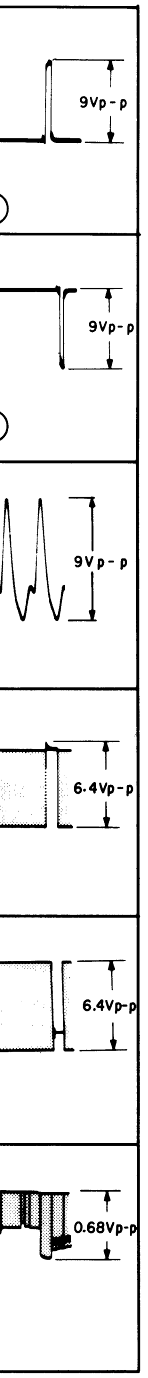
- **For printed wiring boards.**
- ○— : indicated a lead wire mounted on the component side.
- ●— : indicated a lead wire mounted on the conductor side.
- ⊗ : Through hole.
- ▨ : Pattern from the side which enables seeing.
- ░ : Pattern of the rear side.
- Circled numbers refer to waveforms.

Caution:	
Pattern face side: (Conductor Side)	Parts on the pattern face side seen from the pattern face are indicated.
Parts face side: (Component side)	Parts on the parts face side seen from the parts face are indicated.

- **For schematic diagrams.**
- Caution when replacing chip parts.
  New parts must be attached after removal of chip.
  Be careful not to heat the minus side of tantalum capacitor, because it is damaged by the heat.
- All resistors are in ohms, 1/4W unless otherwise noted.
  Chip resistor are 1/10W unless otherwise noted.
  kΩ : 1000Ω , MΩ : 1000kΩ .
- All capacitors are in μF unless otherwise noted. pF: μμF.
  50V or less are not indicated except for electrolytics and tantalums.
- All variable and adjustable resistors have characteristic curve B, unless otherwise noted.
- ⊞ : nonflammable resistor.
- ⊟ : fusible resistor.
- ▭ : panel designation.
- ▭ : adjustment for repair.
- ━ : B+ Line.
- ⇛ : IN/OUT direction of (+, –) B LINE.
- Circled numbers refer to waveforms.

Note: The components identi- fied by mark ⚠ or dotted line with mark ⚠ are critical for safty.
Replace only with part number specified.

When indicating parts by reference number, please include the board name.



THIS NOTE IS COMMON FOR PRINTED WIRING BOARDS AND SCHEMATIC DIAGRAMS.

(In addition to this , the necessary note is printed in each block.)

- **For printed wiring boards.**
- ○— : indicated a lead wire mounted on the component side.
- ●— : indicated a lead wire mounted on the conductor side.
- ⊗ : Through hole.
- ▩ : Pattern from the side which enables seeing.
- ▨ : Pattern of the rear side.
- Circled numbers refer to waveforms.

Caution:	
Pattern face side: (Conductor Side)	Parts on the pattern face side seen from the pattern face are indicated.
Parts face side: (Component side)	Parts on the parts face side seen from the parts face are indicated.

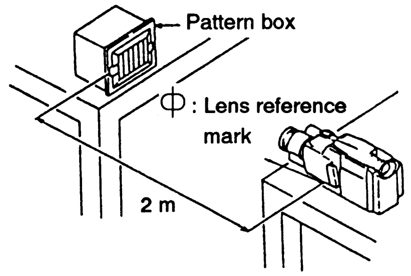
- **For schematic diagrams.**
- Caution when replacing chip parts.
  New parts must be attached after removal of chip.
  Be careful not to heat the minus side of tantalum capacitor, because it is damaged by the heat.
- All resistors are in ohms, 1/4W unless otherwise noted.
  Chip resistor are 1/10W unless otherwise noted.
  kΩ : 1000Ω , MΩ : 1000kΩ .
- All capacitors are in μF unless otherwise noted. pF: μμF.
  50V or less are not indicated except for electrolytics and tantalums.
- All variable and adjustable resistors have characteristic curve B, unless otherwise noted.
- ▭ : nonflammable resistor.
- ▭ : fusible resistor.
- ▭ : panel designation.
- ▭ : adjustment for repair.
- — : B+ Line.
- ⇨ : IN/OUT direction of (+, –) B LINE.
- Circled numbers refer to waveforms.

Note: The components identi- fied by mark ⚠ or dotted line with mark ⚠ are critical for safty.
Replace only with part number specified.

When indicating parts by refer- ence number, please include the board name.

- **Measuring conditions voltage value and waveform. (CAMERA, DIGITAL TITLE, VIEW FINDER block)**
- The object is color bar chart of pattern box.
- Voltages are dc between ground and measurement points. Readings are taken with a digital multimeter (DC 10MΩ).
- Voltage variations may be noted due to normal production tolerances.

1. Connection



2. Adjust the distance so that the output waveform of Fig. a and the Fig. b can be obtain.

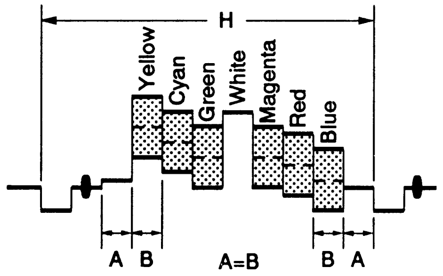


Fig. a (Video output terminal output waveform)

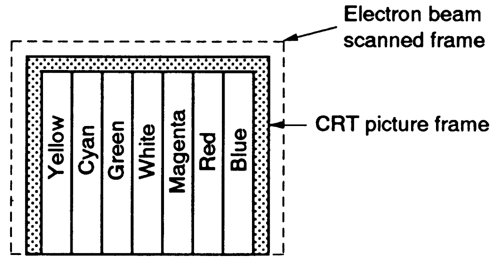


Fig. b (Picture on monitor TV)

(VIDEO, SERVO/SYSTEM CONTROL, VIDEO FUNCTION)

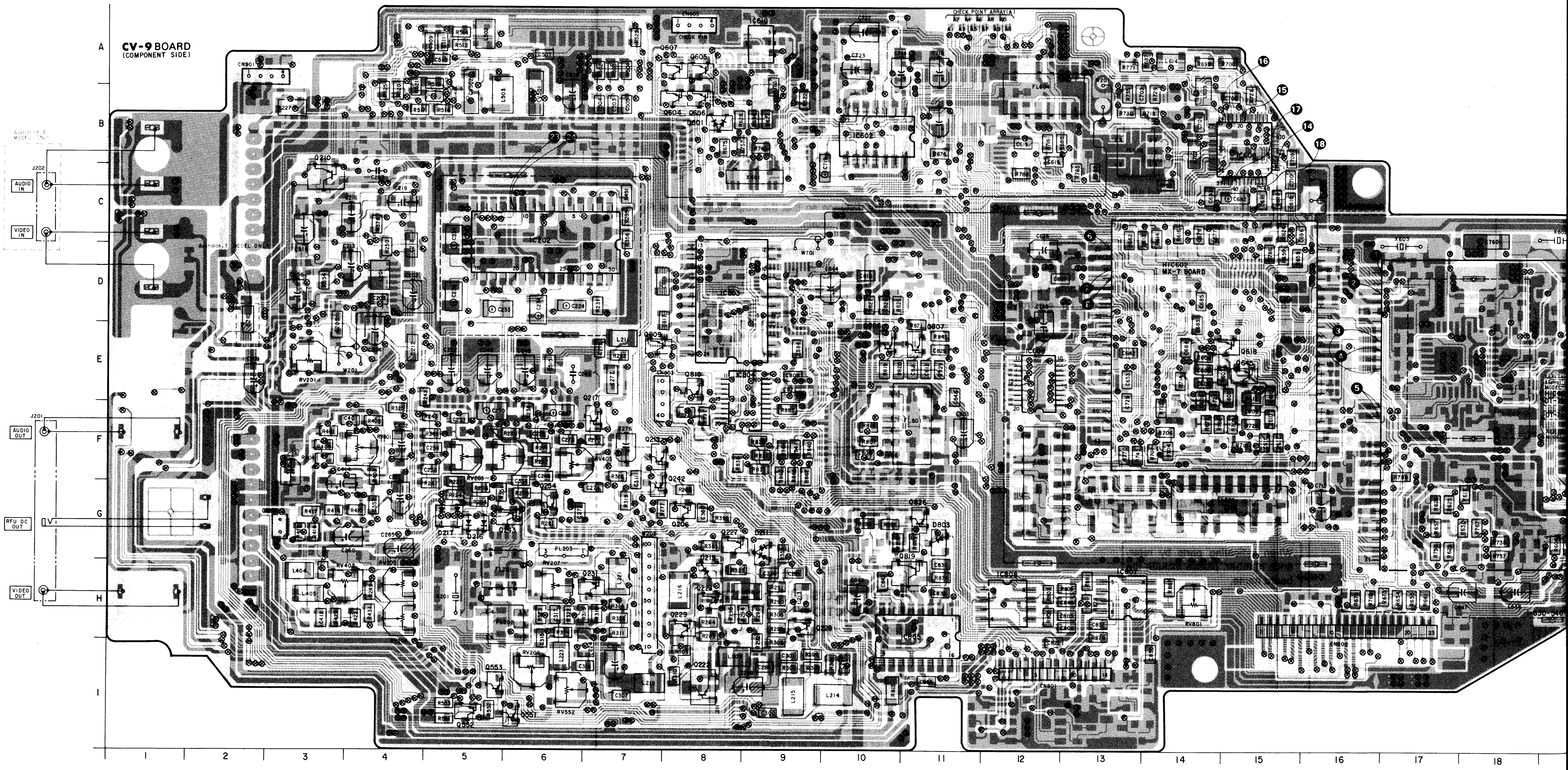
- Voltages are dc between ground and measurement points.
- Readings are taken with a color-bar signal input.
- Readings are taken with a digital multimeter (DC10MΩ).
- Voltage variations may be noted due to normal production tolerances.

There are not the external input terminal (VIDEO/AUDIO IN) and REC switch in AEP, UK model. Accordingly, perform the following operation for signal input and REC mode.

Signal input	: Refer to VIDEO BLOCK ADJUSTMENTS (page 242, Fig. 9-2) for the video signal input method.
REC mode:	: Refer to the transition method to REC mode for the model without the external input terminal in the same Fig. 9-2.

CV-9 (CAMERA, VIDEO PROCESS) PRINTED WIRING BOARDS

— Ref. No. CV-9 BOARD: 2000 series —


CV-9 BOARD
(COMPONENT SIDE)
J202
AUDIO IN
VIDEO IN
J201
AUDIO OUT
RFU DC OUT
VIDEO OUT
CHECK POINT ARRAY (A)
HIC602 MX-7 BOARD
IC202
IC802
IC805
IC806
CN801
CN802
CN803
CN901
A
B
C
D
E
F
G
H
I
1
2
3
4
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6
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8
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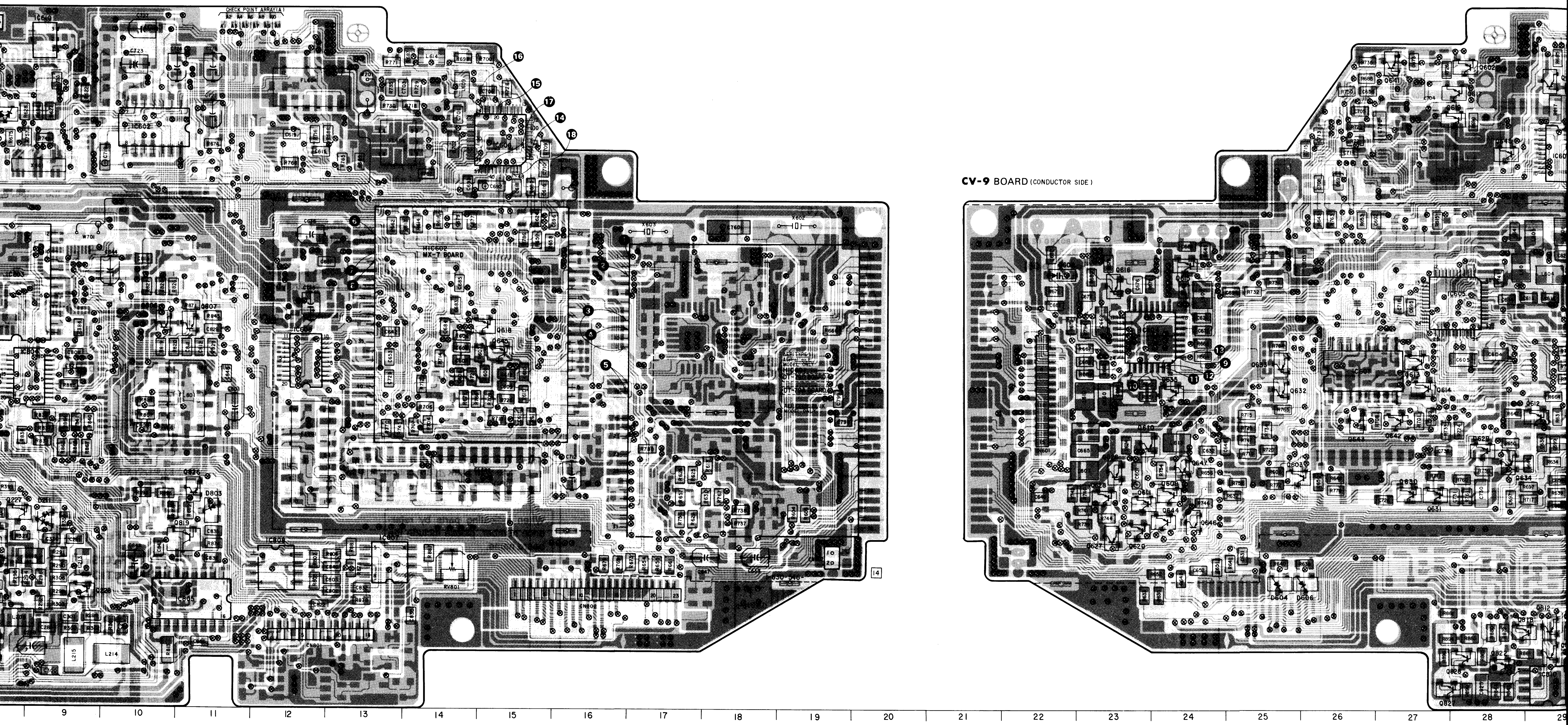
12
13
14
15
16
17
18



CV-9 BOARD (CONDUCTOR SIDE)

CHECK POINT ARRAY(A)
H1C602
MX-7 BOARD
9
10
11
12
13
14
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16
17
18
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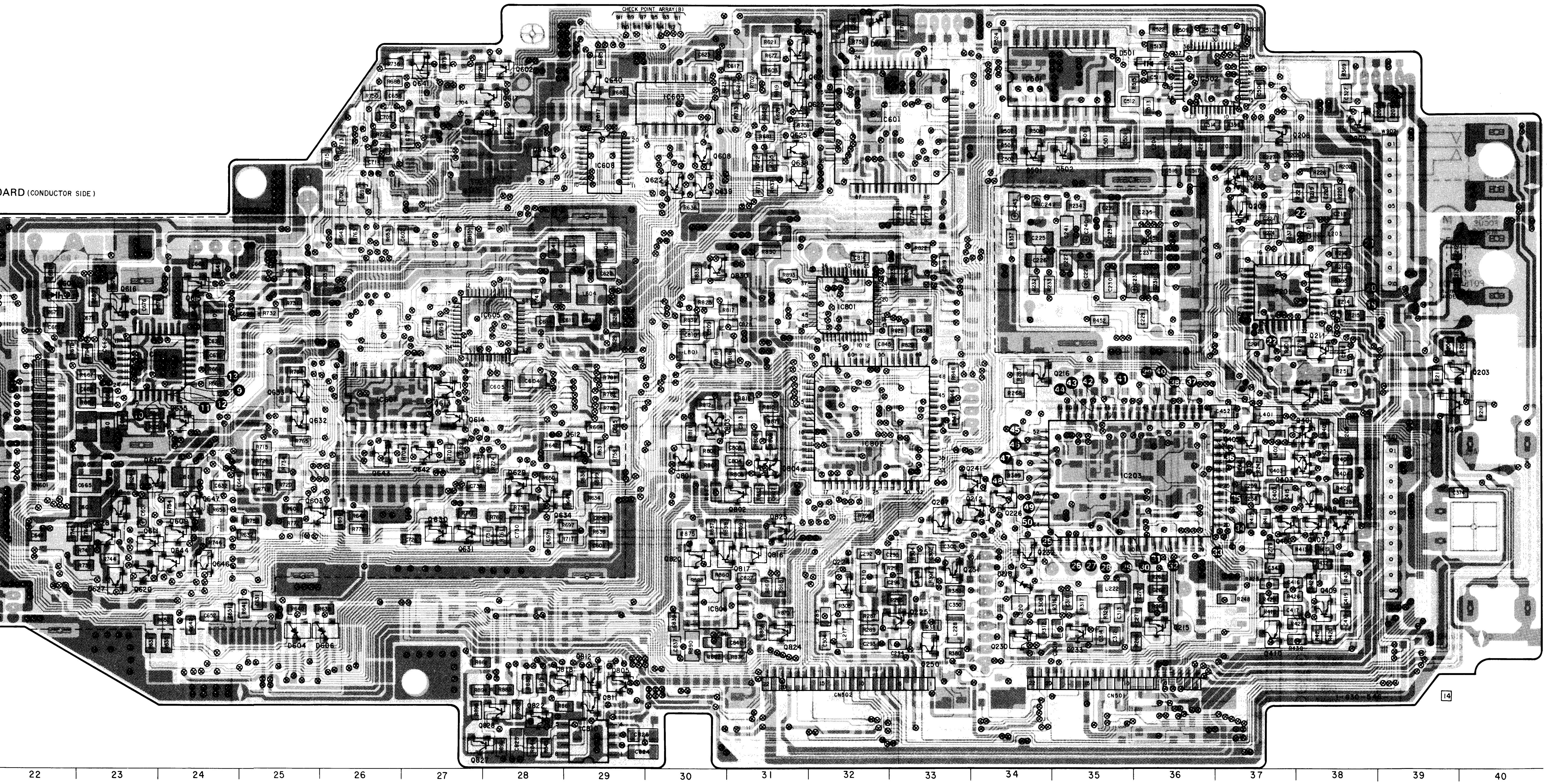
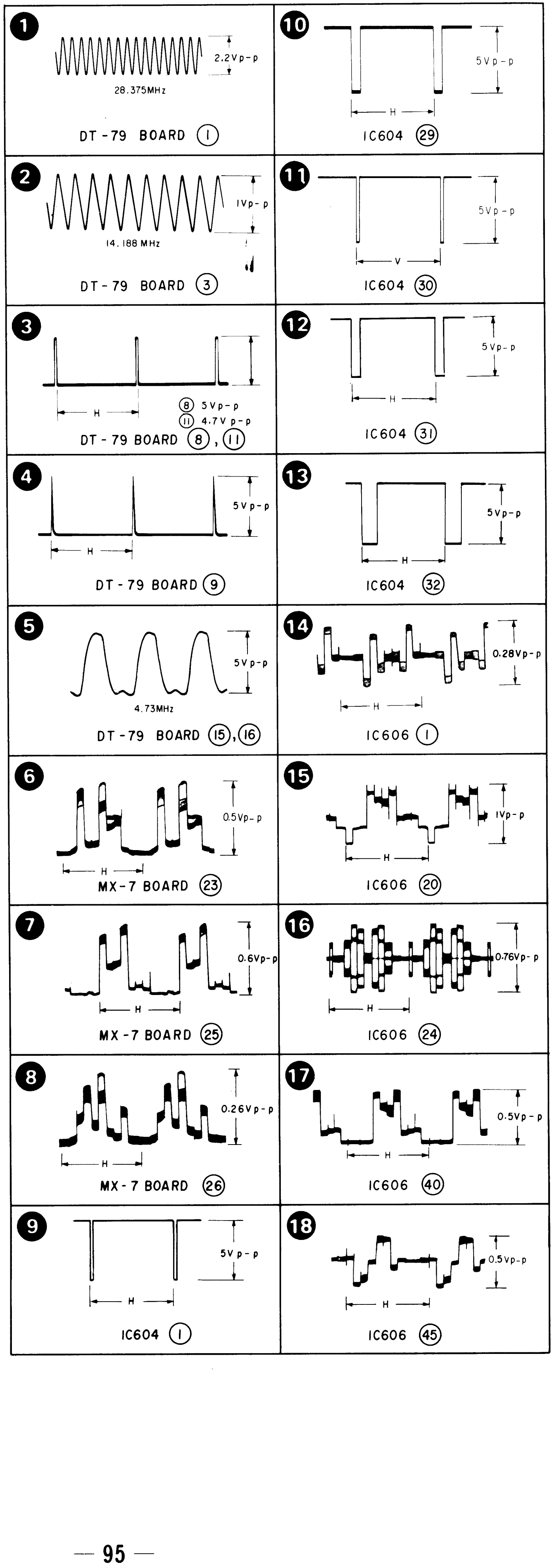
26
27
28
29


ARD (CONDUCTOR SIDE)
CHECK POINT ARRAY (B)
IC603
IC601
IC608
IC605
IC801
IC802
IC806
IC203
CN502
CN501

- **SIGNAL PATH**

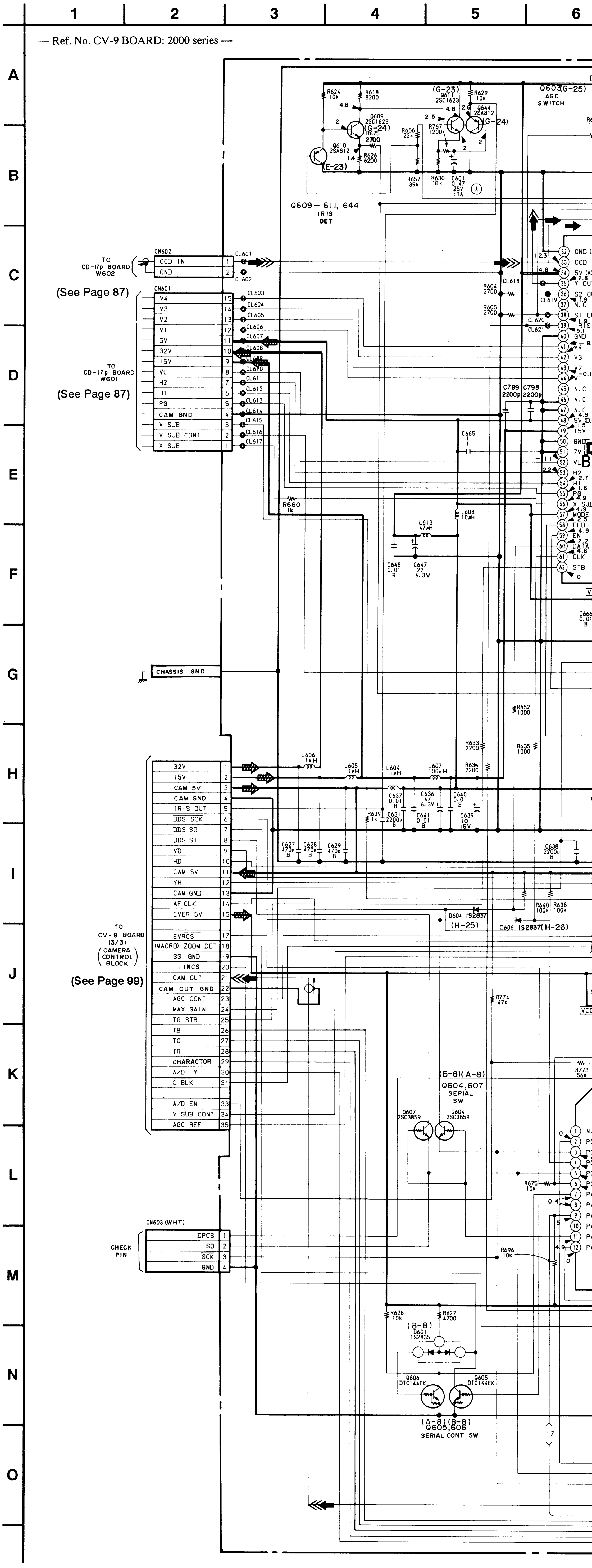
	VIDEO SIGNAL			AUDIO SIGNAL
	CHROMA	Y	Y/CHROMA/DATA	
REC	➡	➡≫	➡≫≫	
PB				

CV-9 BOARD (CAMERA)

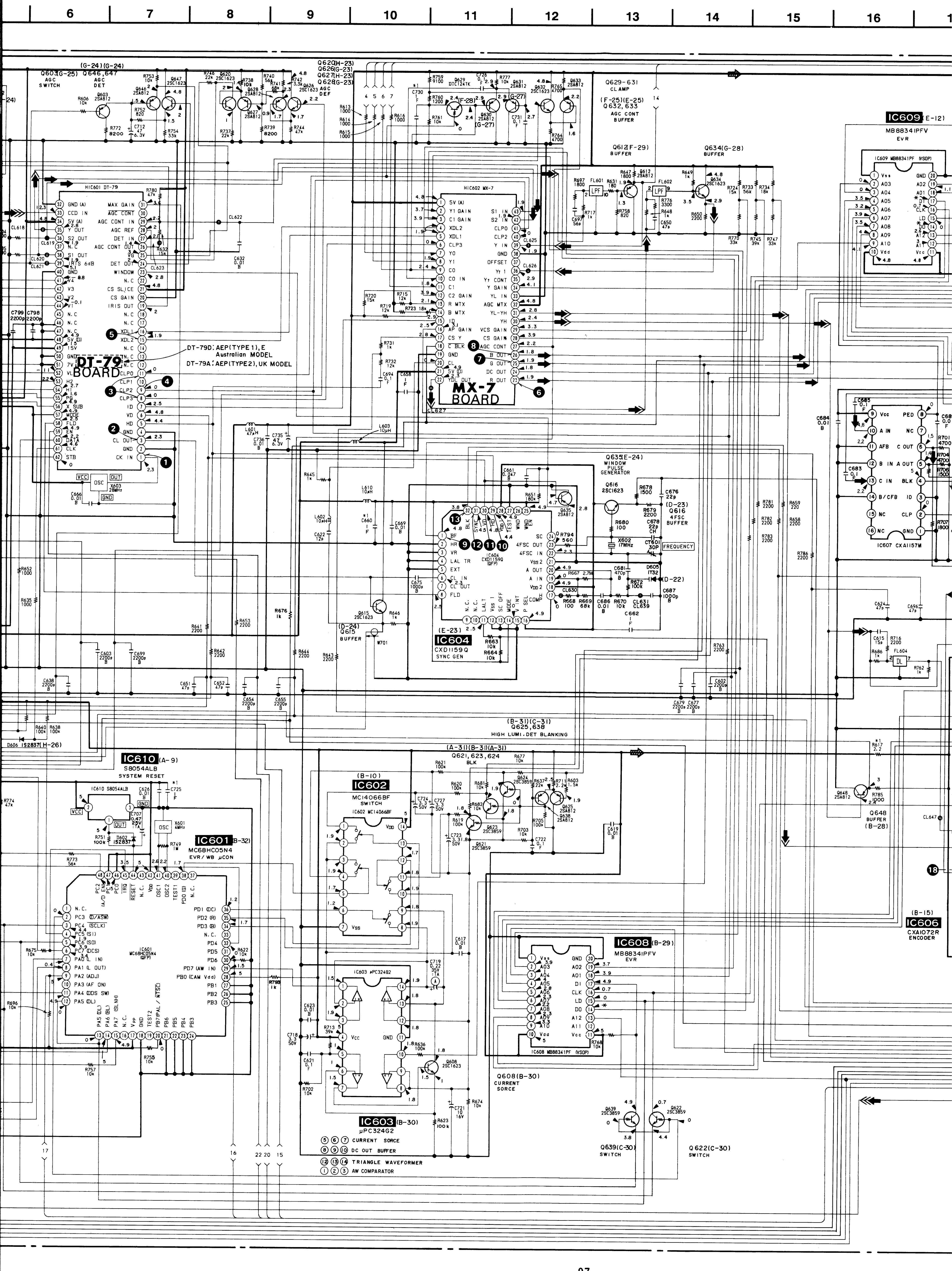


CV-9 (CAMERA) SCHEMATIC DIAGRAMS

— Ref. No. CV-9 BOARD: 2000 series —



1
2
3
4
5
6
A
B
C
D
E
F
G
H
I
J
K
L
M
N
O
Q609-611, 644 IRIS DET
Q603 AGC SWITCH
TO CD-17p BOARD W602 (See Page 87)
CN602 CCD IN GND
TO CD-17p BOARD W601 (See Page 87)
CN601 V4 V3 V2 V1 5V 32V 15V VL H2 H1 PG CAM GND V SUB V SUB CONT X SUB
CHASSIS GND
TO CV-9 BOARD (3/3) (CAMERA CONTROL BLOCK) (See Page 99)
32V 15V CAM 5V CAM GND IRIS OUT DDS SCK DDS SO DDS SI VD HD CAM 5V YH CAM GND AF CLK EVER 5V EVRCS (MACRO) ZOOM DET SS GND LINCS CAM OUT CAM OUT GND AGC CONT MAX GAIN TG STB TB TG TR CHARACTOR A/D Y C BLK A/D EN V SUB CONT AGC REF
CHECK PIN CN603 (WHT) DPCS SO SCK GND
Q604,607 SERIAL SW
Q605,606 SERIAL CONT SW
D601 1S2835
D604 1S2837 (H-25)
D606 1S2837 (H-26)



6
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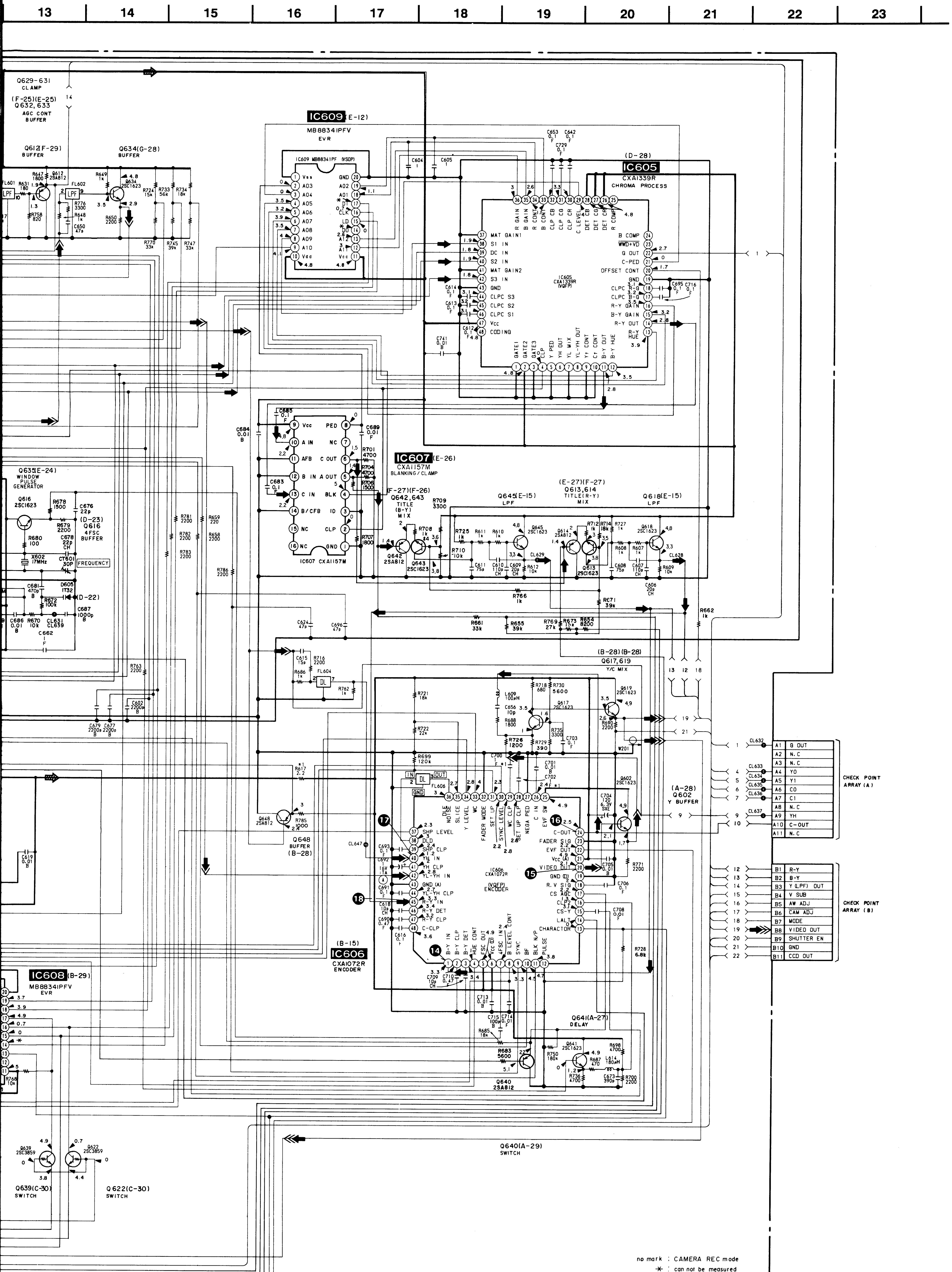
16
Q603(G-25) AGC SWITCH
Q646,647 AGC DET
Q620(H-23) Q626(G-23) Q627(H-23) Q628(G-23) AGC DEF
Q629-631 CLAMP
(F-25)(E-25) Q632,633 AGC CONT BUFFER
Q612(F-29) BUFFER
Q634(G-28) BUFFER
IC609 (E-12) MB88341PFV EVR
HIC601 DT-79
HIC602 MX-7
DT-79 BOARD
MX-7 BOARD
DT-79D: AEP(TYPE1),E Australian MODEL
DT-79A: AEP(TYPE2),UK MODEL
IC607 CXA1157M
Q635(E-24) WINDOW PULSE GENERATOR
Q616 2SC1623
(D-23) Q616 4FSC BUFFER
X602 17MHz
FREQUENCY
(E-23) IC604 CXD1159Q SYNC GEN
(D-24) Q615 BUFFER
(B-31)(C-31) Q625,638 HIGH LUMI. DET BLANKING
(A-31)(B-31)(A-31) Q621,623,624 BLK
IC610 (A-9) S8054ALB SYSTEM RESET
IC602 (B-10) MC14066BF SWITCH
IC601 (B-32) MC68HC05N4 EVR/WB μCON
X601 4MHz
X603 28MHz
IC608 (B-29) MB88341PFV EVR
IC603 (B-30) μPC324G2
⑤⑥⑦ CURRENT SORCE
⑧⑨⑩ DC OUT BUFFER
⑫⑬⑭ TRIANGLE WAVEFORMER
①②③ AW COMPARATOR
Q608(B-30) CURRENT SORCE
Q639(C-30) SWITCH
Q622(C-30) SWITCH
Q648 BUFFER (B-28)
(B-15) IC606 CXA1072R ENCODER
D606 1S2837(H-26)


13
14
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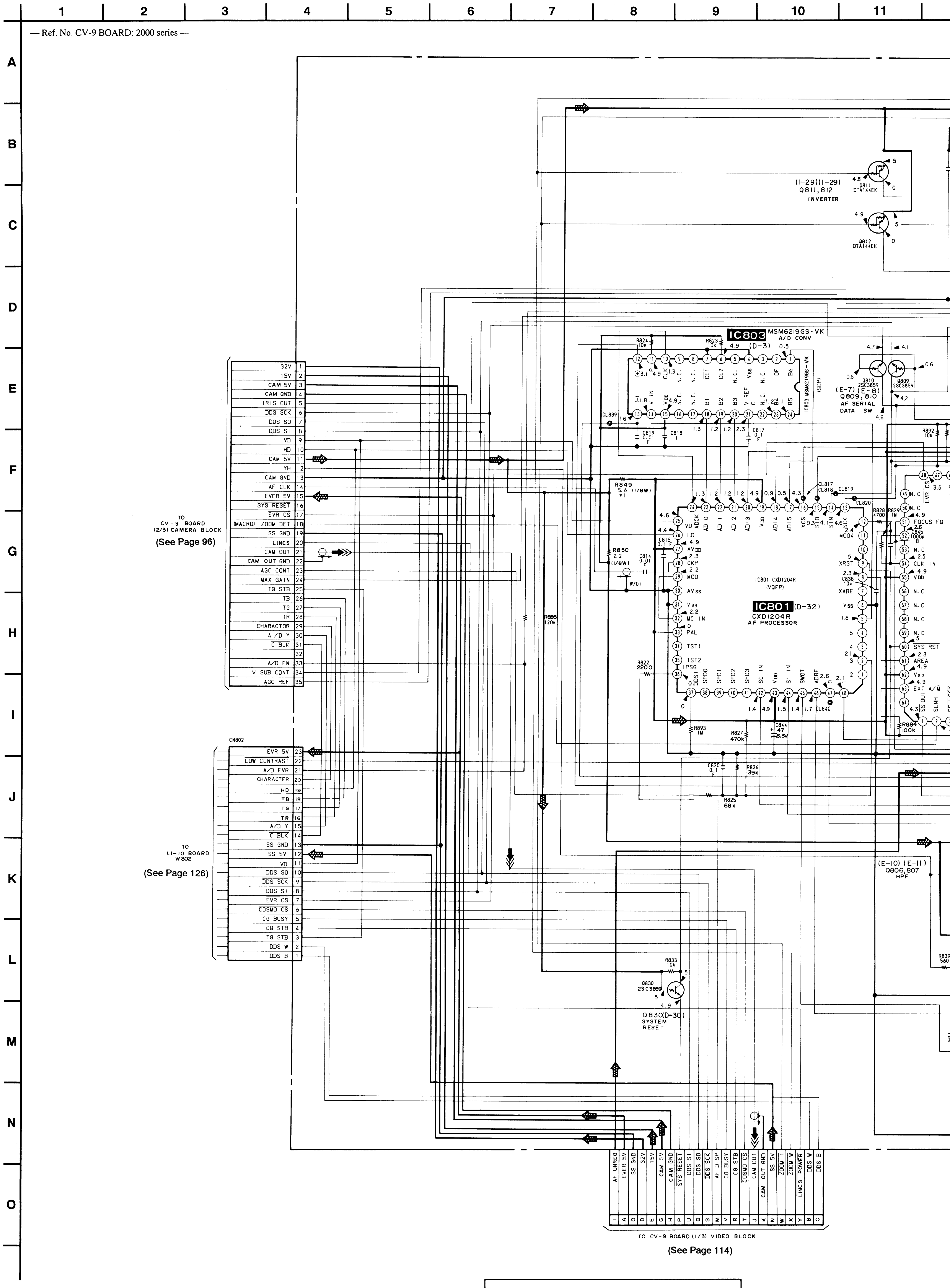
19
20
21
22
23
Q629-631 CLAMP
(F-25)(E-25) Q632,633 AGC CONT BUFFER
Q612(F-29) BUFFER
Q634(G-28) BUFFER
IC609 (E-12)
MB88341PFV
EVR
IC605 (D-28)
CXA1339R
CHROMA PROCESS
IC607 (E-26)
CXA1157M
BLANKING/CLAMP
(F-27)(F-26) Q642,643 TITLE (B-Y) MIX
Q645(E-15) LPF
(E-27)(F-27) Q613,614 TITLE(R-Y) MIX
Q618(E-15) LPF
Q635(E-24) WINDOW PULSE GENERATOR
(D-23) Q616 4FSC BUFFER
FREQUENCY
(B-28)(B-28) Q617,619 Y/C MIX
(A-28) Q602 Y BUFFER
Q648 BUFFER (B-28)
(B-15)
IC606
CXA1072R
ENCODER
IC608 (B-29)
MB88341PFV
EVR
Q641(A-27) DELAY
Q640(A-29) SWITCH
Q639(C-30) SWITCH
Q622(C-30) SWITCH
A1 G OUT
A2 N.C
A3 N.C
A4 YO
A5 Y1
A6 CO
A7 C1
A8 N.C
A9 YH
A10 C-OUT
A11 N.C
CHECK POINT ARRAY (A)
B1 R-Y
B2 B-Y
B3 Y (LPF) OUT
B4 V SUB
B5 AW ADJ
B6 CAM ADJ
B7 MODE
B8 VIDEO OUT
B9 SHUTTER EN
B10 GND
B11 CCD OUT
CHECK POINT ARRAY (B)
⑭
⑮
⑯
⑰
⑱

no mark : CAMERA REC mode
✱ : can not be measured

CV-9 BOARD (2/3)(CAMERA BLOCK)

CV-9 (CAMERA) SCHEMATIC DIAGRAMS

— Ref. No. CV-9 BOARD: 2000 series —


1
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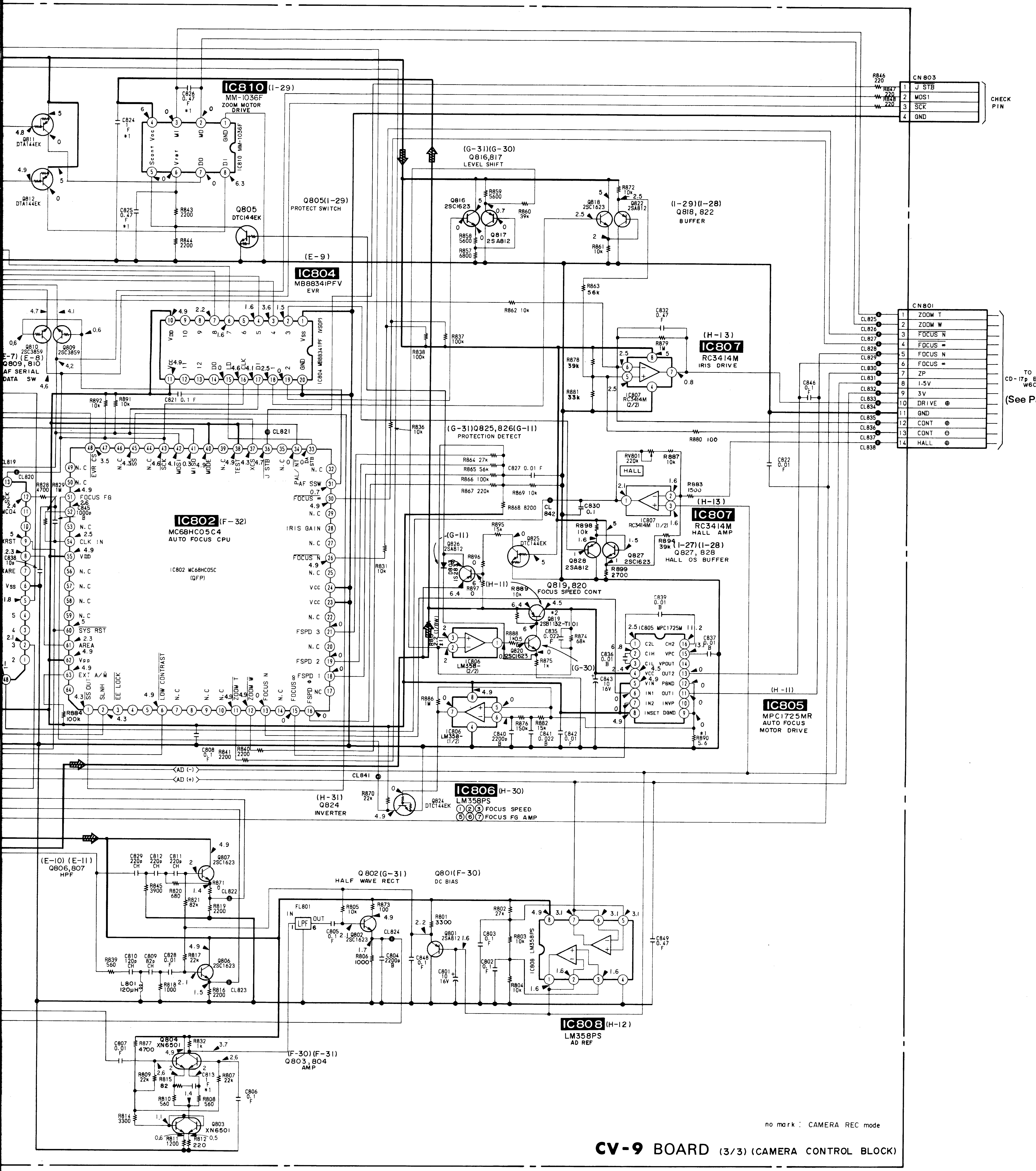
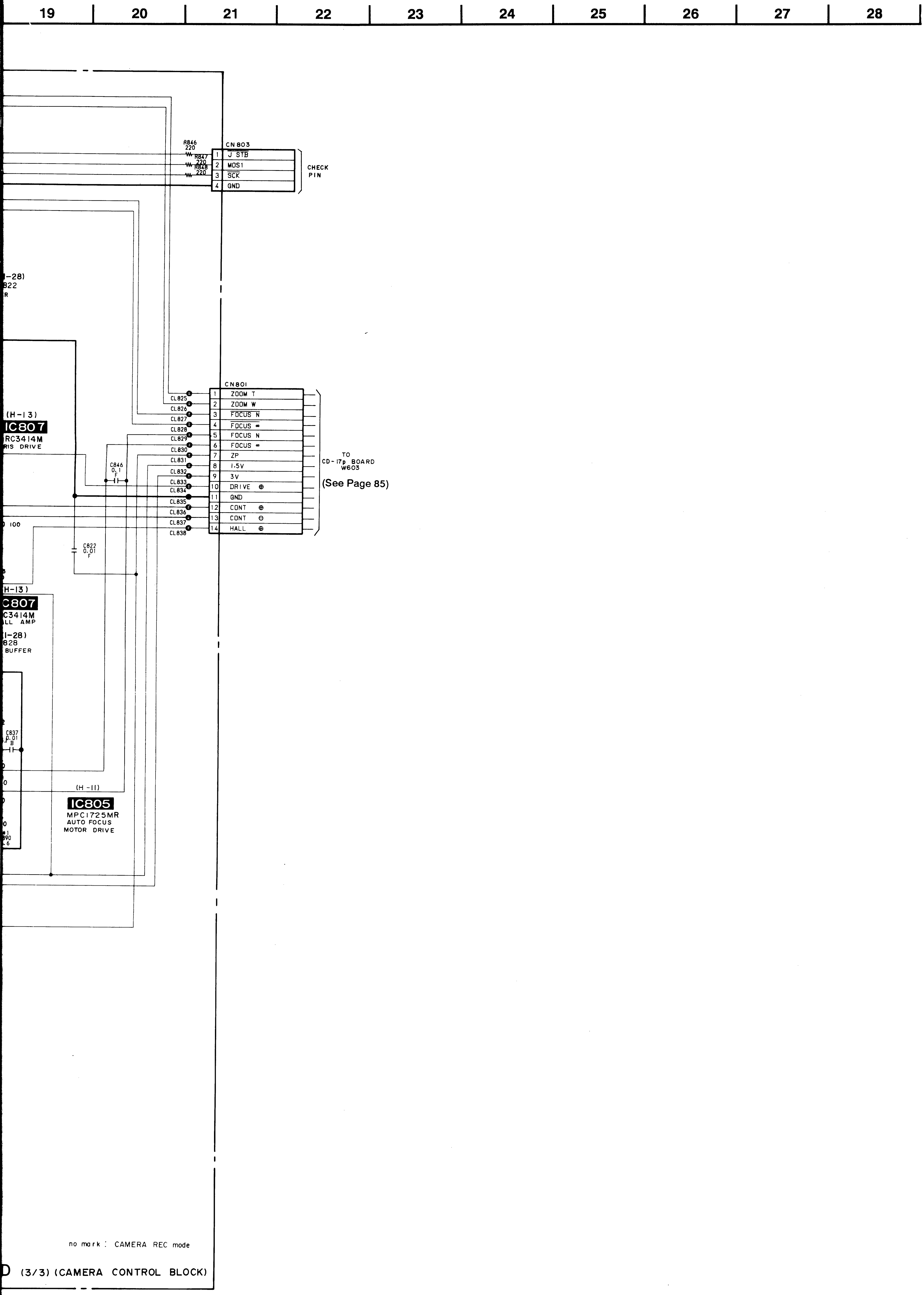
11
A
B
C
D
E
F
G
H
I
J
K
L
M
N
O
TO CV-9 BOARD (2/3) CAMERA BLOCK
(See Page 96)
32V 1
15V 2
CAM 5V 3
CAM GND 4
IRIS OUT 5
DDS SCK 6
DDS SO 7
DDS SI 8
VD 9
HD 10
CAM 5V 11
YH 12
CAM GND 13
AF CLK 14
EVER 5V 15
SYS RESET 16
EVR CS 17
(MACRO) ZOOM DET 18
SS GND 19
LINCS 20
CAM OUT 21
CAM OUT GND 22
AGC CONT 23
MAX GAIN 24
TG STB 25
TB 26
TG 27
TR 28
CHARACTOR 29
A/D Y 30
C BLK 31
32
A/D EN 33
V SUB CONT 34
AGC REF 35
CN802
TO LI-10 BOARD W802
(See Page 126)
EVR 5V 23
LOW CONTRAST 22
A/D EVR 21
CHARACTER 20
HD 19
TB 18
TG 17
TR 16
A/D Y 15
C BLK 14
SS GND 13
SS 5V 12
VD 11
DDS SO 10
DDS SCK 9
DDS SI 8
EVR CS 7
COSMO CS 6
CG BUSY 5
CG STB 4
TG STB 3
DDS W 2
DDS B 1
(I-29)(I-29) Q811,812 INVERTER
Q811 DTA144EK
Q812 DTA144EK
IC803 MSM6219GS-VK A/D CONV (D-3)
R824 10k
R823 10k
CL839
C819 0.01 F
C818 1
C817 0.1 F
Q810 2SC3859
Q809 2SC3859
(E-7) (E-8) Q809,810 AF SERIAL DATA SW
R849 5.6 (1/8W) *1
R850 2.2 (1/8W)
C815 0.1 F
C814 0.01 F
W701
R885 120k
R822 2200
IC801 CXD1204R (VQFP)
IC801 (D-32) CXD1204R AF PROCESSOR
VD
HD
AV DD
CKP
MCO
AV SS
VSS
MC IN
PAL
TST1
TST2
IPSG
DDSI
SPD0
SPD1
SPD2
SPD3
SO IN
VDD
SI IN
SWOT
ADRF
ADCK
AD10
AD11
AD12
AD13
AD14
AD15
XCS
STD
STN
SCK
MCO4
XRST
XARE
CL817 CL818
CL819
CL820
C838 10p
R828 4700
R829 1M
C845 1000p B
EVR CS
N.C
FOCUS FG
CLK IN
SYS RST
AREA
EXT A/M
SS OUT
SLNH
R884 100k
R892 10k
R893 1M
R827 470k
C844 47 6.3V
C820 0.1 F
R826 39k
R825 68k
CL840
(E-10) (E-11) Q806,807 HPF
R839 560
R833 10k
Q830 2SC3859
Q830(D-30) SYSTEM RESET
AF UNREG
EVER 5V
SS GND
32V
15V
CAM GND
SYS RESET
DDS SI
DDS SO
DDS SCK
AF DISP
CG STB
COSMO CS
CAM OUT
CAM OUT GND
SS 5V
ZOOM T
ZOOM W
LINCS POWER
DDS W
DDS B
I A D G E C H P U Q S M V R T J K N W X Y B C
TO CV-9 BOARD (1/3) VIDEO BLOCK
(See Page 114)


IC810 (I-29)
MM-1036F
ZOOM MOTOR DRIVE
Q811 DTA144EK
Q812 DTA144EK
Q805 (I-29) PROTECT SWITCH
Q805 DTC144EK
IC804 (E-9)
MB88341PFV
EVR
Q810 2SC3859
Q809 2SC3859
(E-7) (E-8) Q809, 810 AF SERIAL DATA SW
IC802 (F-32)
MC68HC05C4
AUTO FOCUS CPU
IC802 MC68HC05C (QFP)
(G-31)(G-30) Q816,817 LEVEL SHIFT
Q816 2SC1623
Q817 2SA812
Q818 2SC1623
Q822 2SA812
(I-29)(I-28) Q818, 822 BUFFER
CN803
J STB
MOS1
SCK
GND
CHECK PIN
CN801
ZOOM T
ZOOM W
FOCUS N
FOCUS ∞
FOCUS N
FOCUS ∞
ZP
1.5V
3V
DRIVE ⊕
GND
CONT ⊕
CONT ⊖
HALL ⊕
TO CD-17p
(See P
IC807 (H-13)
RC3414M
IRIS DRIVE
(G-31) Q825, 826 (G-11) PROTECTION DETECT
Q825 DTC144EK
Q826 2SA812
IC807 (H-13)
RC3414M
HALL AMP
Q828 2SA812
Q827 2SC1623
(I-27)(I-28) Q827, 828 HALL OS BUFFER
Q819, 820 FOCUS SPEED CONT
Q819 2SB1132-T101
Q820 2SC1623
IC806 LM358-(2/2)
IC806 LM358-(1/2)
IC805 MPC1725M
IC805 (H-11)
MPC1725MR
AUTO FOCUS MOTOR DRIVE
IC806 (H-30)
LM358PS
①②③ FOCUS SPEED
⑤⑥⑦ FOCUS FG AMP
(H-31) Q824 INVERTER
Q824 DTC144EK
(E-10) (E-11) Q806, 807 HPF
Q807 2SC1623
Q806 2SC1623
Q802 (G-31) HALF WAVE RECT
Q801 (F-30) DC BIAS
Q802 2SC1623
Q801 2SA812
FL801 LPF
L801 120μH
IC808 (H-12)
LM358PS
AD REF
Q804 XN6501
Q803 XN6501
(F-30) (F-31) Q803, 804 AMP
HALL
RV801 220k
(AD (−))
(AD (+))
CL841
CL842
CL821

no mark : CAMERA REC mode

CV-9 BOARD (3/3) (CAMERA CONTROL BLOCK)


19
20
21
22
23
24
25
26
27
28
R846
220
R847
220
R848
220
CN 803
1 J STB
2 MOS1
3 SCK
4 GND
CHECK PIN
-28)
822
R
CN801
1 ZOOM T
2 ZOOM W
3 FOCUS N
4 FOCUS ∞
5 FOCUS N
6 FOCUS ∞
7 ZP
8 1.5V
9 3V
10 DRIVE ⊕
11 GND
12 CONT ⊕
13 CONT ⊖
14 HALL ⊕
CL825
CL826
CL827
CL828
CL829
CL830
CL831
CL832
CL833
CL834
CL835
CL836
CL837
CL838
TO CD-17p BOARD W603
(See Page 85)
(H-13)
IC807
RC3414M
RIS DRIVE
C846
0.1
F
100
C822
0.01
F
(H-13)
C807
C3414M
LL AMP
-28)
828
BUFFER
C837
0.01
B
(H-11)
IC805
MPC1725MR
AUTO FOCUS
MOTOR DRIVE

no mark : CAMERA REC mode

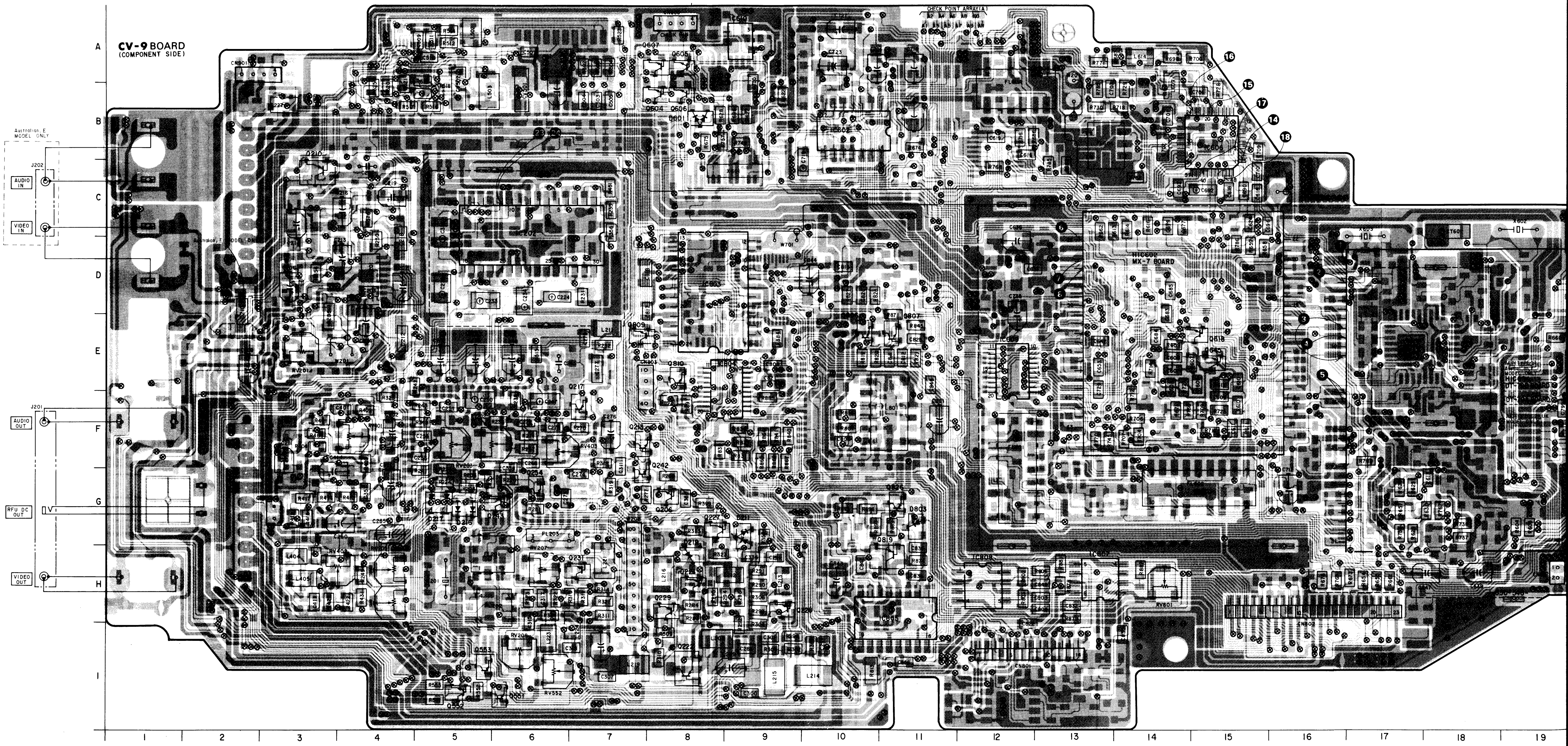
D (3/3) (CAMERA CONTROL BLOCK)

- **SIGNAL PATH**

	VIDEO SIGNAL			AUDIO SIGNAL
	CHROMA	Y	Y/CHROMA/DATA	
REC			➡≫	
PB				

CV-9 (CAMERA, VIDEO PROCESS) PRINTED WIRING BOARDS

— Ref. No. CV-9 BOARD: 2000 series —


CV-9 BOARD
(COMPONENT SIDE)
Australian, E
MODEL ONLY
J202
AUDIO IN
VIDEO IN
J201
AUDIO OUT
RFU DC OUT
VIDEO OUT
CN901
CHECK POINT ARRAY(A)
MX-7 BOARD
CN801
CN802
A
B
C
D
E
F
G
H
I
1
2
3
4
5
6
7
8
9
10
11
12
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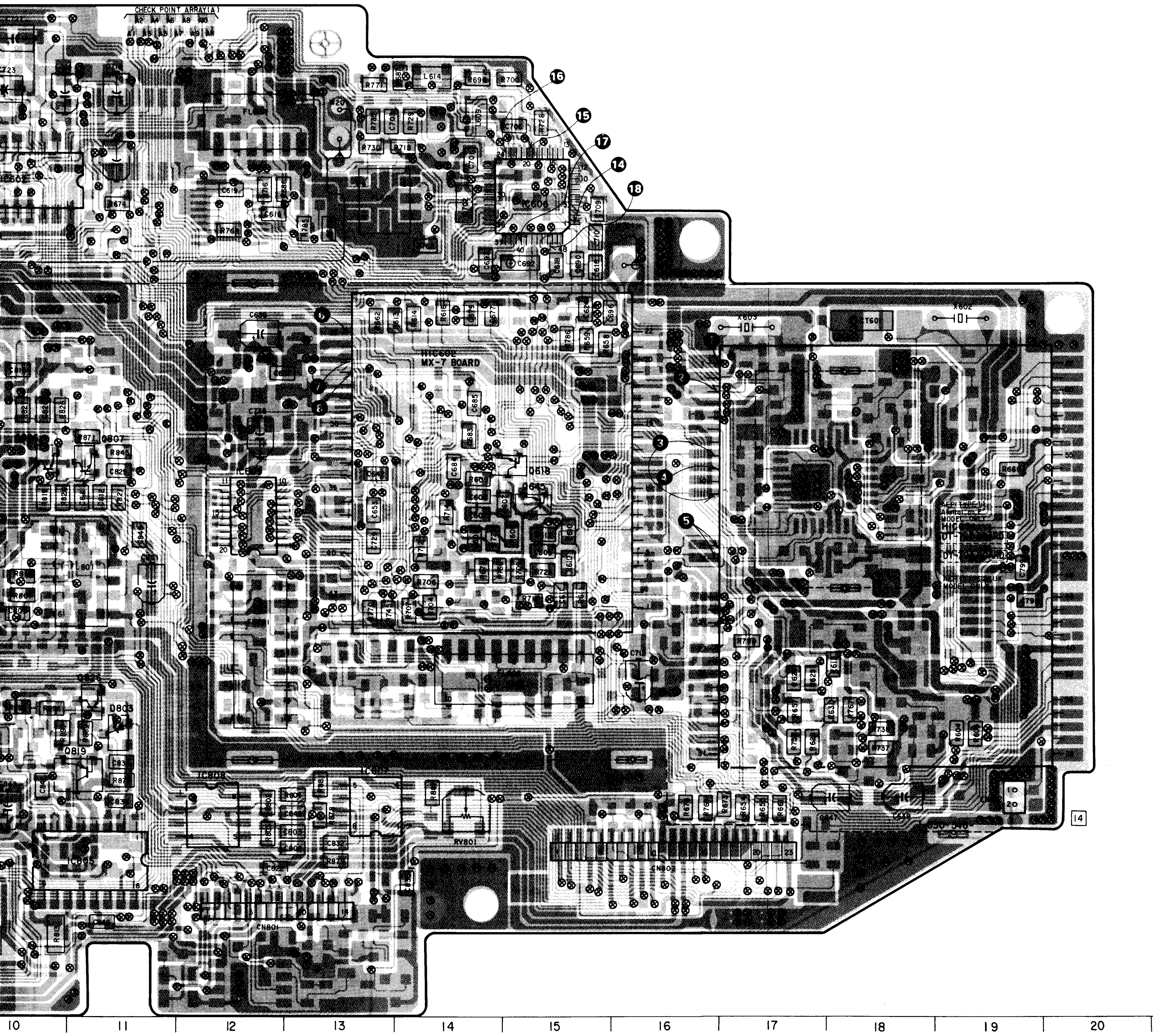
CHECK POINT ARRAY(A)
HIC602
MX-7 BOARD
RV801
CN801
CN802
10
11
12
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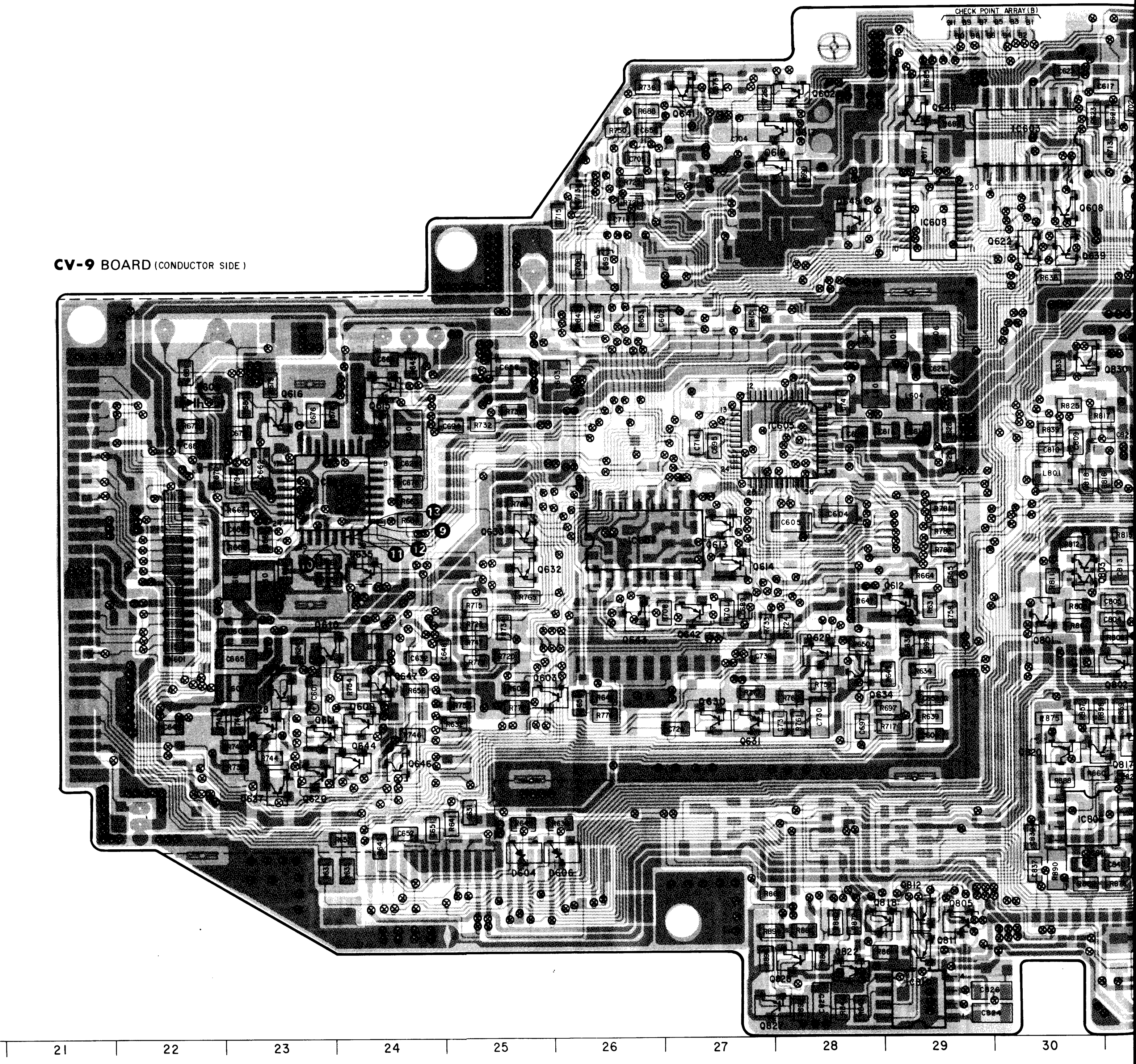
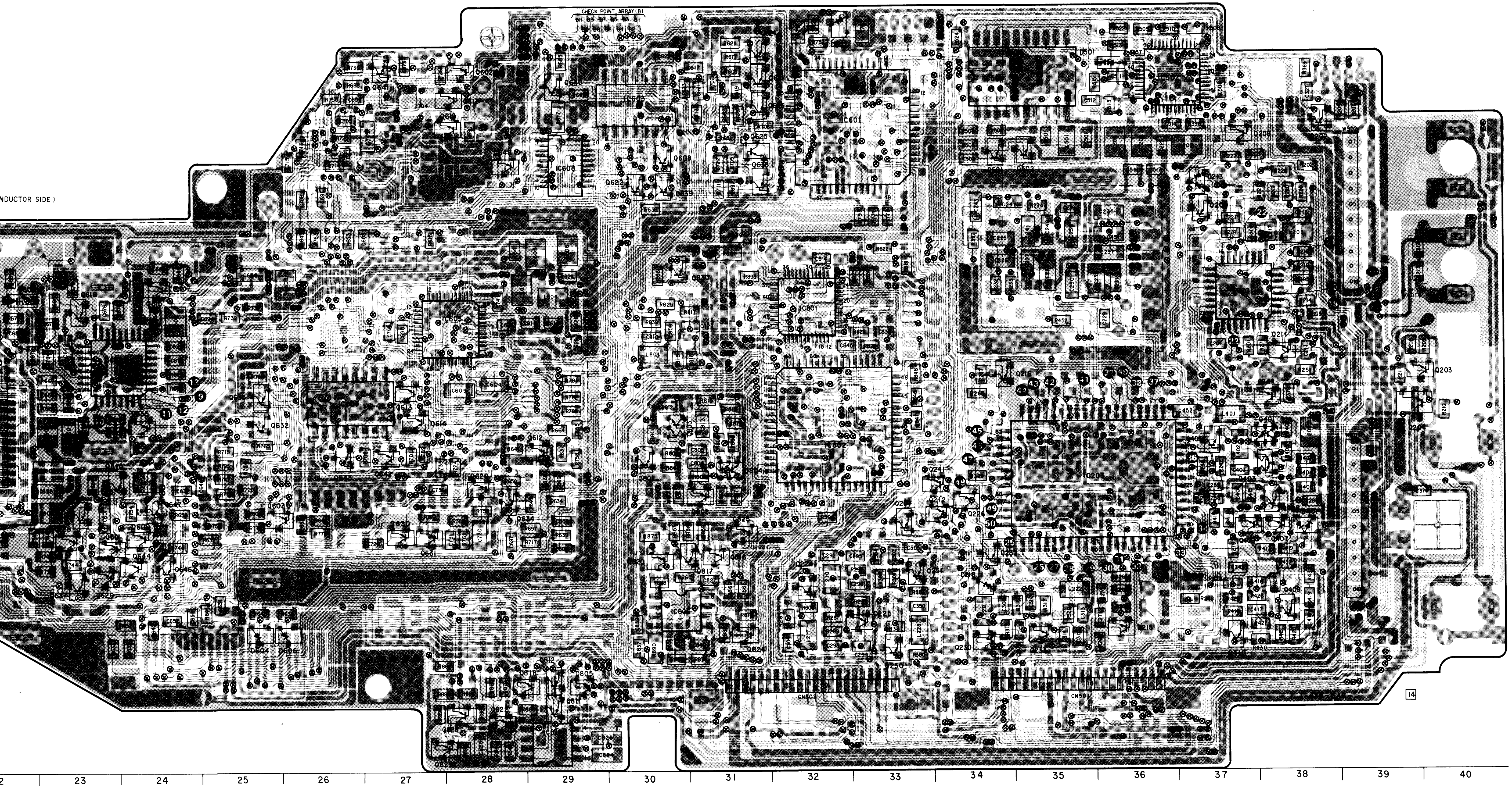
19
20

CV-9 BOARD (CONDUCTOR SIDE)


CHECK POINT ARRAY(B)
IC608
IC602
21
22
23
24
25
26
27
28
29
30

NDUCTOR SIDE)


CHECK POINT ARRAY (B)
IC601
IC801
IC203
IC602
IC603
IC608
CN502
CN501
Q203
Q213
Q214
Q216
Q230
Q401
Q501
Q502
Q601
Q603
Q604
Q606
Q612
Q613
Q614
Q622
Q625
Q631
Q632
Q634
Q642
Q644
Q645
Q646
Q805
Q811
Q812
Q816
Q817
Q824
C601
C605
C452
L401
L222
L601
14
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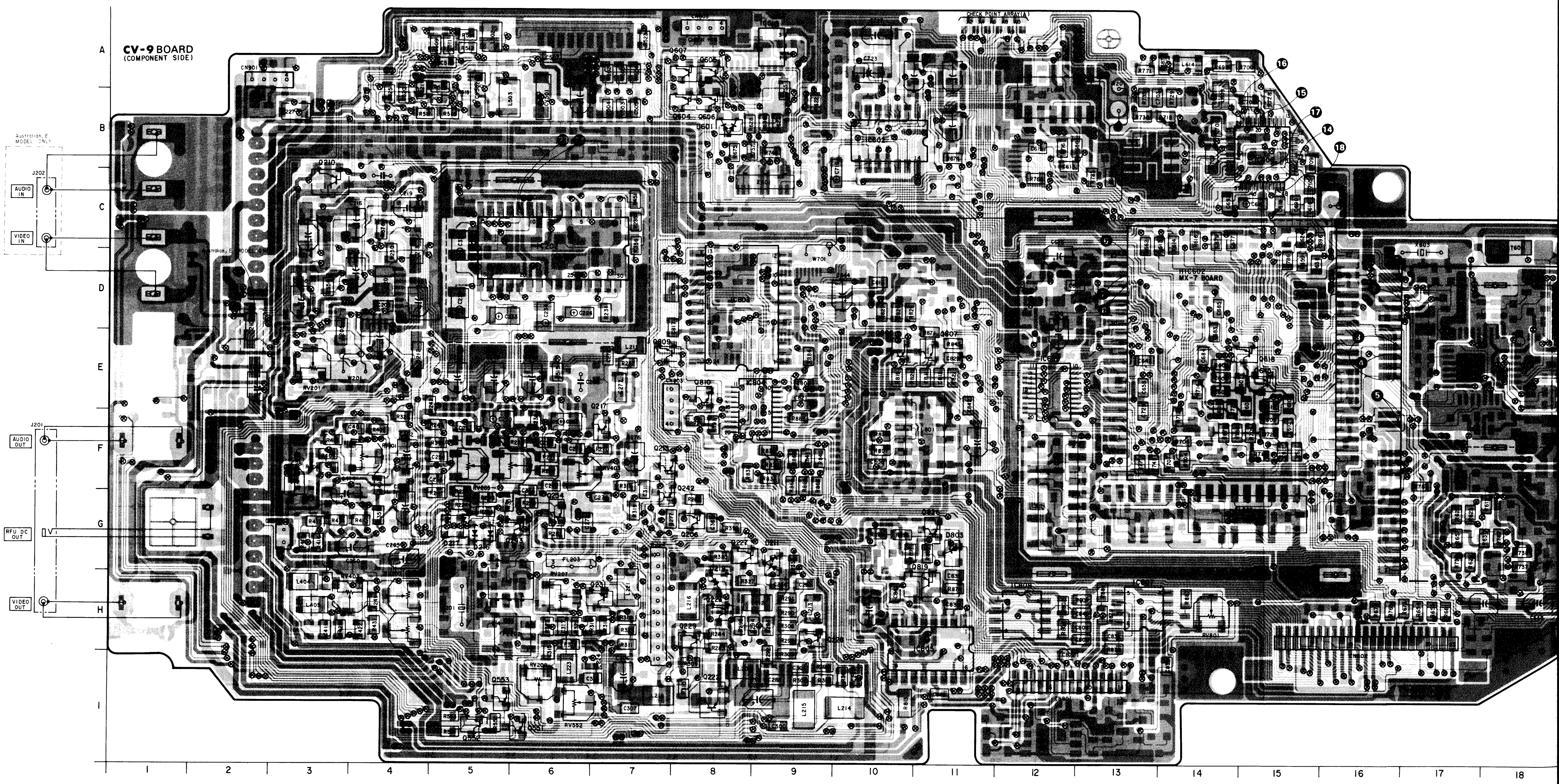
CV-9 (CAMERA, VIDEO PROCESS) PRINTED WIRING BOARDS

— Ref. No. CV-9 BOARD: 2000 series —


CV-9 BOARD
(COMPONENT SIDE)
Australian, E
MODEL ONLY
J202
AUDIO IN
VIDEO IN
J201
AUDIO OUT
RFU DC OUT
VIDEO OUT
CN901
CHECK POINT ARRAY(A)
HIC6602
MX-7 BOARD
A
B
C
D
E
F
G
H
I
1
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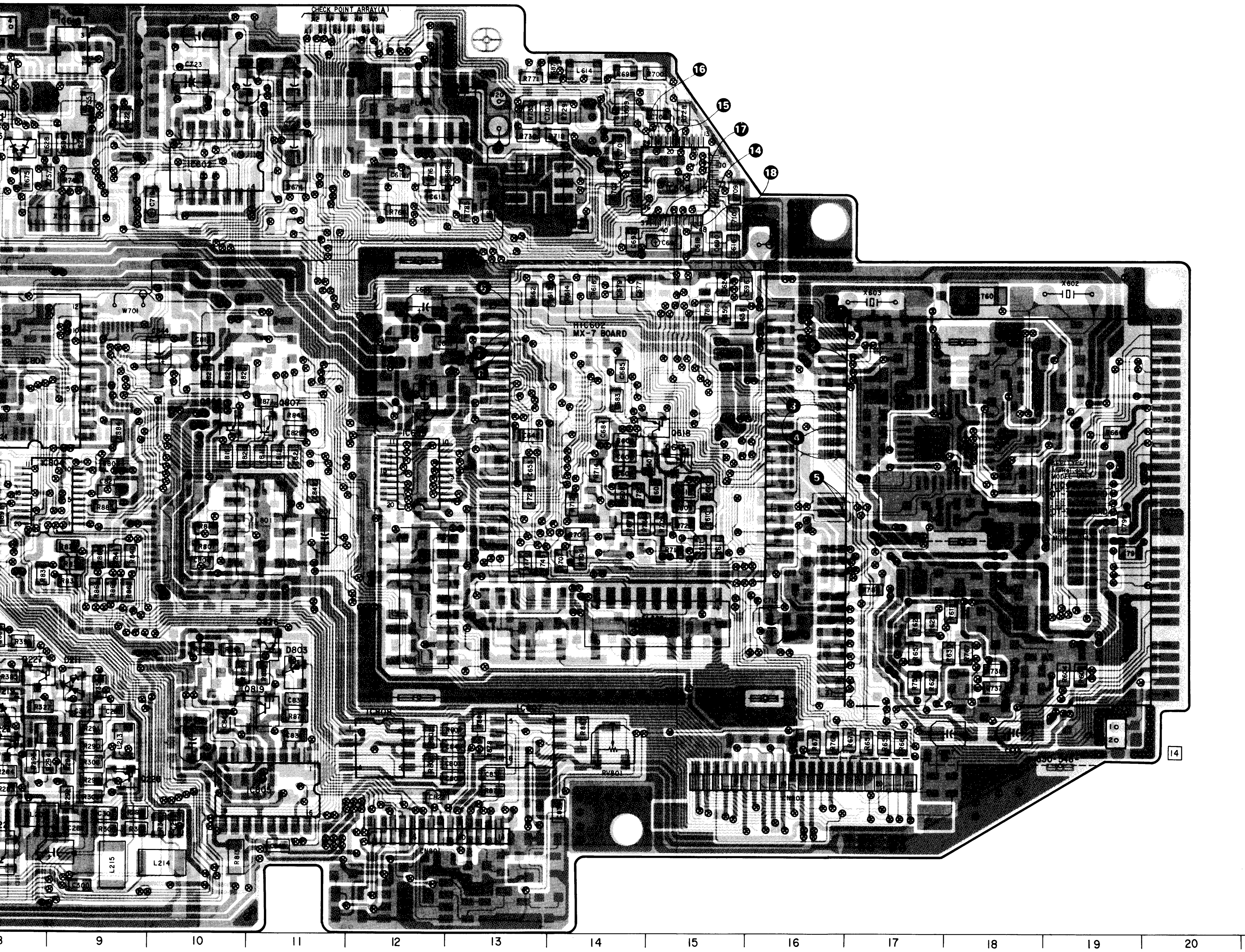
CHECK POINT ARRAY(A)
MX-7 BOARD
16
15
17
14
18
14
8
9
10
11
12
13
14
15
16
17
18
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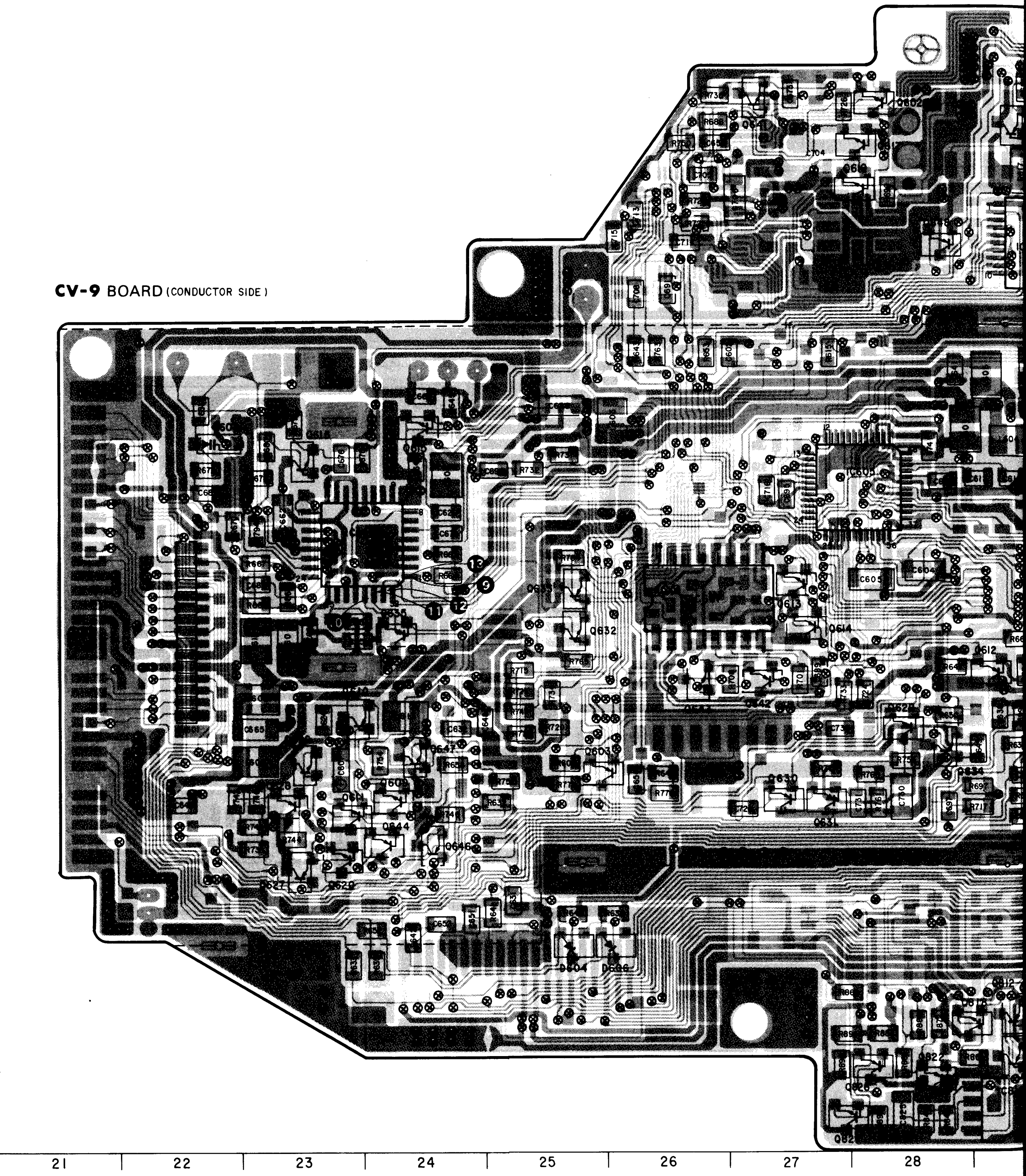
CV-9 BOARD (CONDUCTOR SIDE)
21
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23
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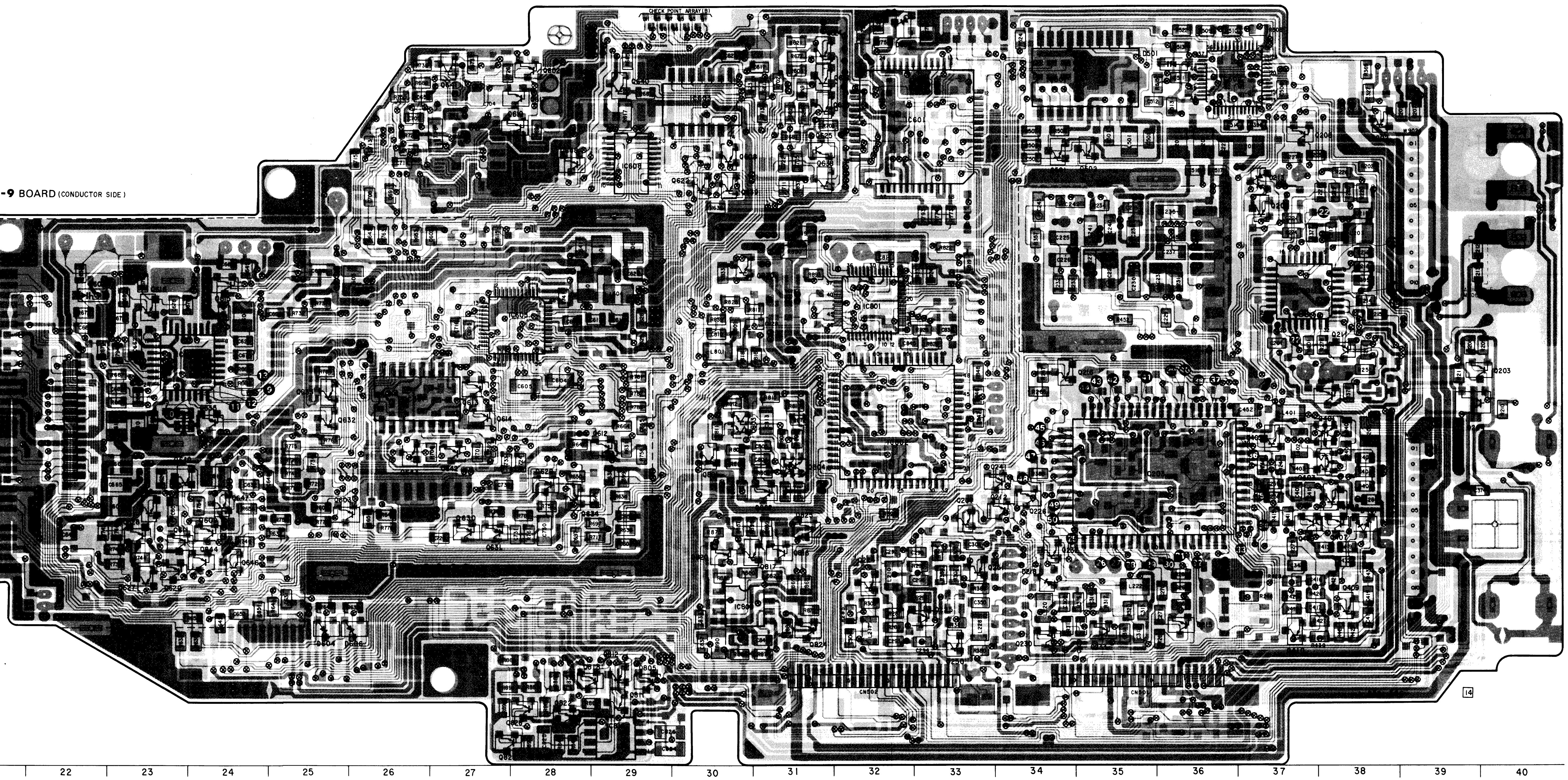
28

-9 BOARD (CONDUCTOR SIDE)


CHECK POINT ARRAY (B)
IC601
IC602
IC603
IC604
IC605
IC801
CN502
CN501
Q501
Q502
Q203
Q632
Q612
Q614
Q817
Q824
Q230
14
22
23
24
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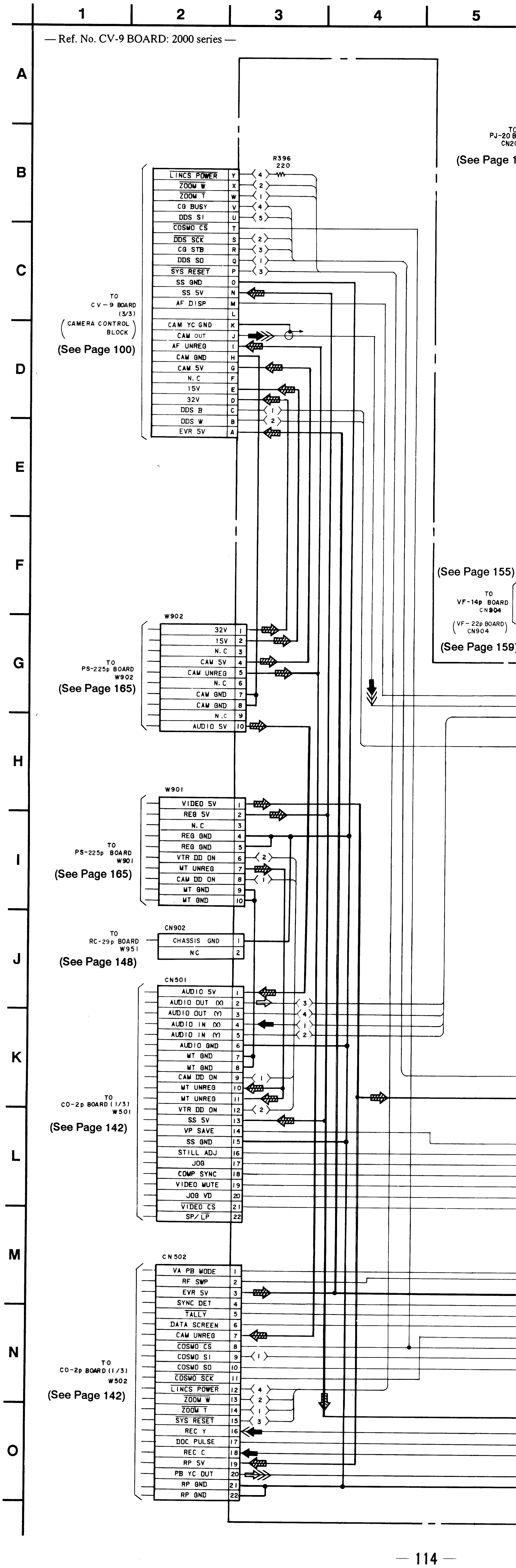
CV-9 (VIDEO PROCESS) SCHEMATIC DIAGRAMS

— Ref. No. CV-9 BOARD: 2000 series —



1
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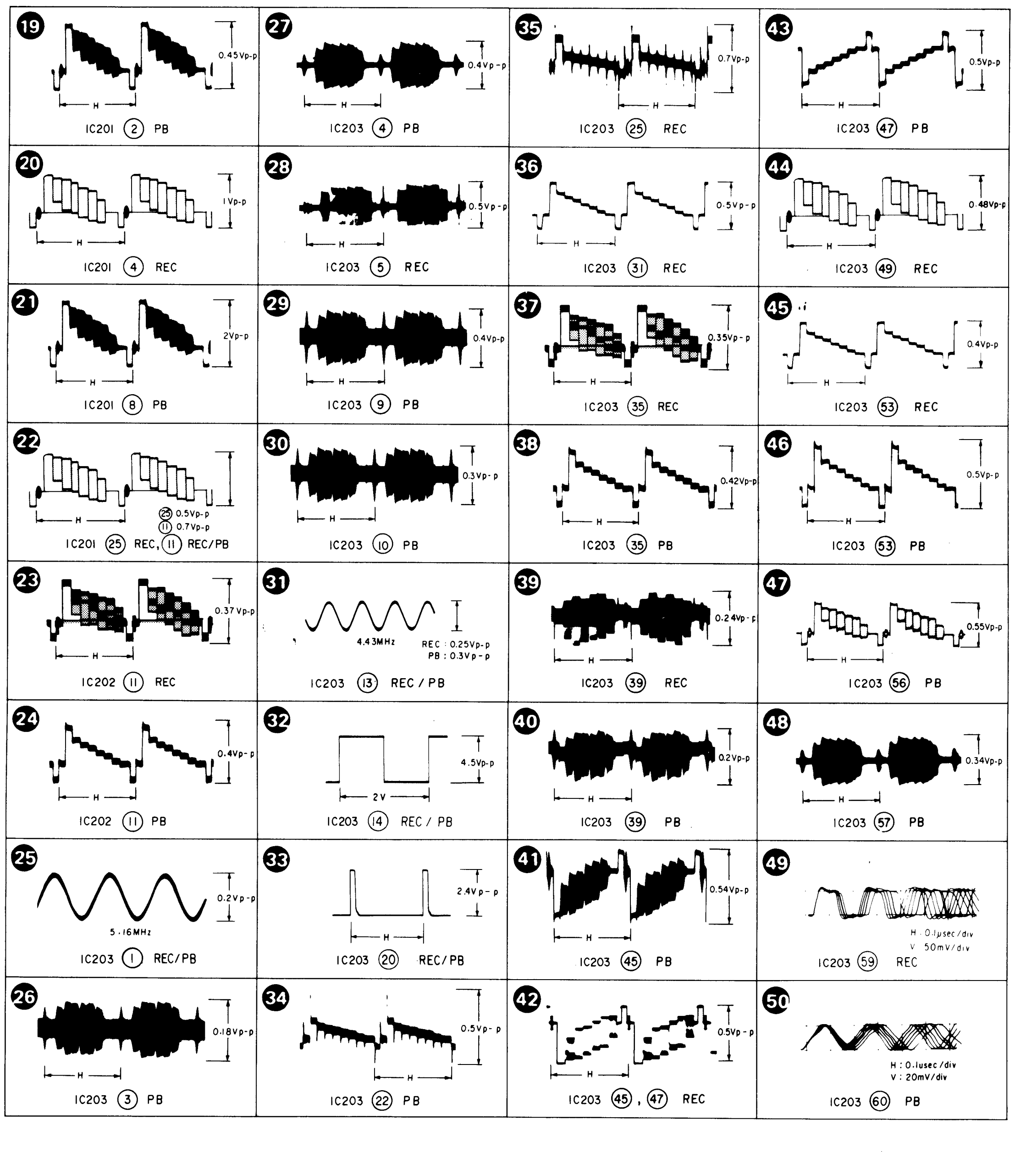
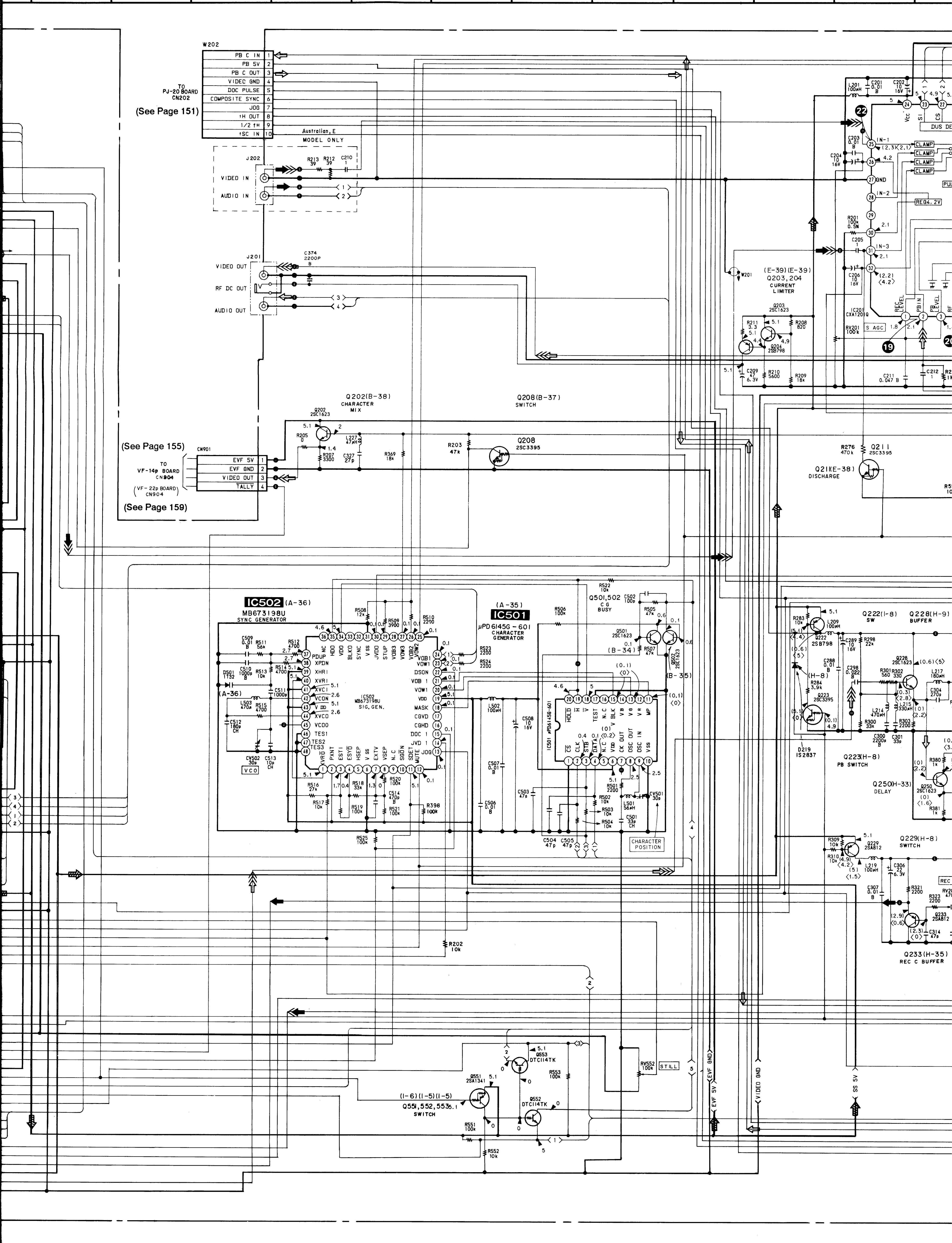
A
B
C
D
E
F
G
H
I
J
K
L
M
N
O
R396
220
TO
CV-9 BOARD
(3/3)
(CAMERA CONTROL BLOCK)
(See Page 100)
LINCS POWER Y
ZOOM W X
ZOOM T W
CG BUSY V
DDS SI U
COSMO CS T
DDS SCK S
CG STB R
DDS SO Q
SYS RESET P
SS GND O
SS 5V N
AF DISP M
L
CAM YC GND K
CAM OUT J
AF UNREG I
CAM GND H
CAM 5V G
N.C F
15V E
32V D
DDS B C
DDS W B
EVR 5V A
TO
PJ-20 B
CN20
(See Page 1
(See Page 155)
TO
VF-14p BOARD
CN904
(VF-22p BOARD CN904)
(See Page 159
W902
TO
PS-225p BOARD
W902
(See Page 165)
32V 1
15V 2
N.C 3
CAM 5V 4
CAM UNREG 5
N.C 6
CAM GND 7
CAM GND 8
N.C 9
AUDIO 5V 10
W901
TO
PS-225p BOARD
W901
(See Page 165)
VIDEO 5V 1
REG 5V 2
N.C 3
REG GND 4
REG GND 5
VTR DD ON 6
MT UNREG 7
CAM DD ON 8
MT GND 9
MT GND 10
CN902
TO
RC-29p BOARD
W951
(See Page 148)
CHASSIS GND 1
NC 2
CN501
TO
CO-2p BOARD (1/3)
W501
(See Page 142)
AUDIO 5V 1
AUDIO OUT (X) 2
AUDIO OUT (Y) 3
AUDIO IN (X) 4
AUDIO IN (Y) 5
AUDIO GND 6
MT GND 7
MT GND 8
CAM DD ON 9
MT UNREG 10
MT UNREG 11
VTR DD ON 12
SS 5V 13
VP SAVE 14
SS GND 15
STILL ADJ 16
JOG 17
COMP SYNC 18
VIDEO MUTE 19
JOG VD 20
VIDEO CS 21
SP/LP 22
CN502
TO
CO-2p BOARD (1/3)
W502
(See Page 142)
VA PB MODE 1
RF SWP 2
EVR 5V 3
SYNC DET 4
TALLY 5
DATA SCREEN 6
CAM UNREG 7
COSMO CS 8
COSMO SI 9
COSMO SO 10
COSMO SCK 11
LINCS POWER 12
ZOOM W 13
ZOOM T 14
SYS RESET 15
REC Y 16
DOC PULSE 17
REC C 18
RP 5V 19
PB YC OUT 20
RP GND 21
RP GND 22

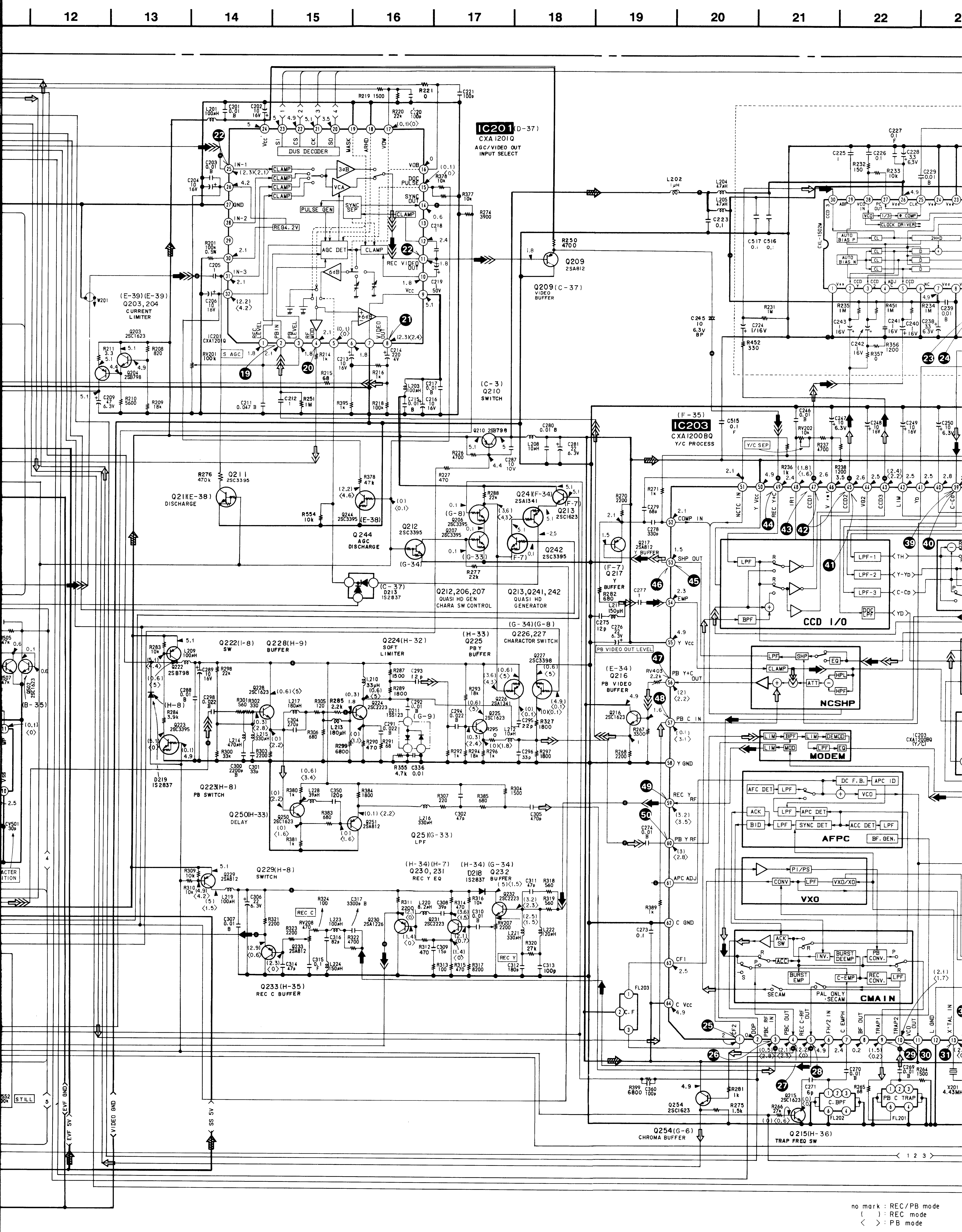
- **SIGNAL PATH**

	VIDEO SIGNAL			AUDIO SIGNAL
	CHROMA	Y	Y/CHROMA/DATA	
REC	➡	➡»	➡⋙	➡
PB	⇨	⇨»	⇨⋙	⇨

CV-9 BOARD (VIDEO)




W202
PB C IN
PB 5V
PB C OUT
VIDEO GND
DOC PULSE
COMPOSITE SYNC
JOG
fH OUT
1/2 fH
fSC IN
TO PJ-20 BOARD CN202
(See Page 151)
Australian, E MODEL ONLY
J202
VIDEO IN
AUDIO IN
R213 39
R212 39
C210 1
J201
VIDEO OUT
RF DC OUT
AUDIO OUT
C374 2200P B
Q202(B-38) CHARACTER MIX
Q202 2SC1623
R205 0
R207 3300
L227 47μH
C327 27p
R369 18k
Q208(B-37) SWITCH
R203 47k
Q208 2SC3395
(See Page 155)
CN901
EVF 5V
EVF GND
VIDEO OUT
TALLY
TO VF-14p BOARD CN904
(VF-22p BOARD) CN904
(See Page 159)
IC502 (A-36)
MB67319BU SYNC GENERATOR
IC502 MB67319BU SIG, GEN.
R508 12k
R509 3900
R510 2200
R511 56k
R512 4700
C509 0.01 B
C510 1000p B
R513 10k
R514 4700
D501 1T32
C511 1000p
L503 470μ
R515 4700
C512 180p CH
CV502 30p
C513 10p CH
VCO
R516 27k
R517 10k
R518 33k
R519 100k
R520 100k
R521 100k
C514 470p B
R398 100k
R525 100k
R523 2200
R524 2200
(A-35)
IC501
μPD6145G-601 CHARACTER GENERATOR
IC501 μPD6145B-601
L502 100μH
C508 10 16V
C507 0.01 B
C506 0.01 B
C503 47p
C504 47p
C505 47p
R506 100k
R522 10k
C502 100p
Q501,502 C G BUSY
R505 47k
Q501 2SC1623
Q502 2SC1623
R507 47k
(B-34)
(B-35)
R501 2200
R502 10k
R503 10k
R504 10k
L501 56μH
C501 33p CH
CV501 30p
CHARACTER POSITION
L201 100μH
C201 0.01 B
C202 10 16V
C203 0.01 B
C204 10 16V
C205 1
C206 10 16V
R201 100k 0.5W
IC201 CXA1201Q
RV201 100k
S AGC
CLAMP
REG4.2V
DUS DE
IN-1
IN-2
IN-3
GND
REC LEVEL
PB IN
PB LEVEL
(E-39)(E-39) Q203,204 CURRENT LIMITER
Q203 2SC1623
Q204 2SB798
R211 3.3
R208 820
R210 5600
R209 18k
C209 47 6.3V
W201
C211 0.047 B
C212 1
R276 470k
Q211 2SC3395
Q211(E-38) DISCHARGE
R283 10k
L209 100μH
Q222 2SB798
Q222(I-8) SW
Q228(H-9) BUFFER
C289 10 16V
R298 22k
C288 0.01 B
C298 0.022 B
Q228 2SC1623
R301 560
R302 330
L217 180μH
C304 270p
R284 3.9k
Q223 2SC3395
L214 470μH
L215 330μH
R300 33k
R303 2200
C300 2200p B
C301 33p
D219 1S2837
Q223(H-8) PB SWITCH
Q250(H-33) DELAY
Q250 2SC1623
R380 1k
R381 1k
R309 10k
R310 10k
Q229 2SA812
Q229(H-8) SWITCH
L219 100μH
C306 22 6.3V
C307 0.01 B
R321 2200
R323 2200
Q233 2SA812
C314 47p
Q233(H-35) REC C BUFFER
R202 10k
Q553 DTC114TK
Q551 2SA1341
R553 100k
Q552 DTC114TK
RV552 100k
STILL
(I-6)(I-5)(I-5) Q551,552,553 SWITCH
R551 100k
R552 10k
EVF 5V
EVF GND
VIDEO GND
SS 5V


12
13
14
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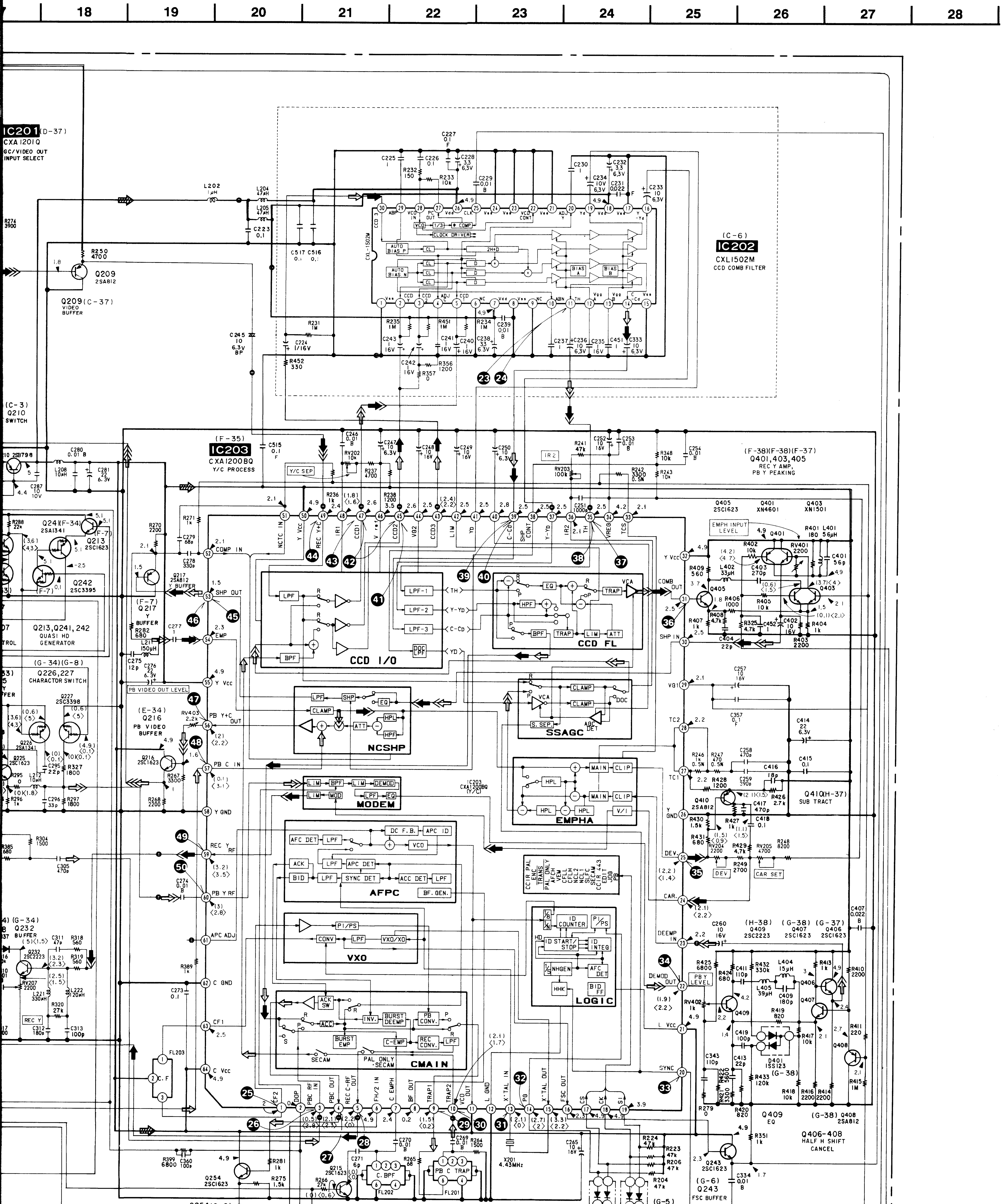
16
17
18
19
20
21
22
IC201 (D-37)
CXA1201Q
AGC/VIDEO OUT INPUT SELECT
DUS DECODER
CLAMP
3dB
VCA
PULSE GEN
SYNC SEP
REG4.2V
AGC DET
6dB
REC VIDEO OUT
S AGC
Q209
2SA812
Q209(C-37)
VIDEO BUFFER
(E-39)(E-39)
Q203,204
CURRENT LIMITER
Q210 2SB798
(C-3)
Q210
SWITCH
Q211
2SC3395
Q211(E-38)
DISCHARGE
Q244
AGC DISCHARGE
Q212
2SC3395
Q241(F-34)
2SA1341
Q213
2SC1623
Q242
2SC3395
D213
1S2837
Q212,206,207
QUASI HD GEN
CHARA SW CONTROL
Q213,Q241,242
QUASI HD GENERATOR
Q222(I-8)
SW
Q228(H-9)
BUFFER
Q224(H-32)
SOFT LIMITER
(H-33)
Q225
PB Y BUFFER
(G-34)(G-8)
Q226,227
CHARACTOR SWITCH
Q223(H-8)
PB SWITCH
D219
1S2837
Q250(H-33)
DELAY
Q251(G-33)
LPF
Q229(H-8)
SWITCH
(H-34)(H-7)
Q230,231
REC Y EQ
(H-34)(G-34)
D218 Q232
1S2837 BUFFER
REC C
REC Y
Q233(H-35)
REC C BUFFER
(F-35)
IC203
CXA1200BQ
Y/C PROCESS
Y/C SEP
CCD I/O
LPF
BPF
LPF-1
LPF-2
LPF-3
DOC LPF
NCSHP
MODEM
AFPC
VXO
CMAIN
PB VIDEO OUT LEVEL
(F-7)
Q217
Y BUFFER
(E-34)
Q216
PB VIDEO BUFFER
FL203
C.F
Q254(G-6)
CHROMA BUFFER
Q215(H-36)
TRAP FREQ SW
C.BPF
FL202
PB C TRAP
FL201
X201
4.43MHz
CXL-1502M
AUTO BIAS P
AUTO BIAS N
CLOCK DRIVER
EVF GND
EVF 5V
VIDEO GND
SS 5V
STILL
CHARACTER POSITION

no mark : REC/PB mode
(　) : REC mode
〈　〉: PB mode


18
19
20
21
22
23
24
25
26
27
28
IC201 (D-37)
CXA1201Q
AGC/VIDEO OUT INPUT SELECT
Q209 2SA812
Q209 (C-37) VIDEO BUFFER
R250 4700
L202 1μH
L204 47μH
L205 47μH
C223 0.1
C517 C516
(C-6)
IC202
CXL1502M
CCD COMB FILTER
CXL-1502M
AUTO BIAS P
AUTO BIAS N
CLOCK DRIVER
BIAS A
BIAS B
2H+D
VCO
1/3
COMP
C227 0.1 F
C225
C226
C228 3.3 6.3V
R232 150
R233 10k
C229 0.01 B
C230
C232 3.3 6.3V
C234 10V 6.3V
C231 0.022
C233 10 6.3V
R231 1M
C245 10 6.3V BP
C724 1/16V
R452 330
R235 1M
R451 1M
R234 1M
C239 0.01 B
C243 1 16V
C241 1 16V
C240 1 16V
C238 3.3 6.3V
C242 1 16V
R356 1200
R357 0
C237 1
C236 10 6.3V
C235 1 16V
C451 1
C333 10 6.3V
23
24
(C-3) Q210 SWITCH
(F-35)
IC203
CXA1200BQ
Y/C PROCESS
C515 0.1 F
Y/C SEP
C246 0.01 B
RV202 10k
R237 4700
C247 10 6.3V
C248 10 16V
C249 10 16V
C250 10 6.3V
IR2
R241 47k
C252 10 16V
C253 0.01 B
RV203 100k
R242 3300 0.5%
R243 10k
R348 10k
C254 0.01 B
(F-38)(F-38)(F-37)
Q401,403,405
REC Y AMP, PB Y PEAKING
NCTC IN
Y VCC
REC Y+C
IR1
CCD1
V ref
CCD2
VO2
CCD3
LIM
YD
C-CD
SHP CONT
Y-YD
IR2
TH
VREG
TCS
44
43
42
41
39
40
38
37
CCD I/O
LPF
BPF
LPF-1
LPF-2
LPF-3
DOC LPF
TH
Y-YD
C-CD
YD
CCD FL
EQ
HPF
TRAP
VCA
BPF
LIM
ATT
NCSHP
LPF
SHP
CLAMP
HPL
HPF
ATT
SSAGC
S.SEP.
ABC DET
DOC
MODEM
LIM
BPF
DEMOD
MOD
LPF
EQ
EMPHA
MAIN
CLIP
HPL
V/I
IC203 CXA1200BQ (Y/C)
AFPC
AFC DET
DC F.B.
APC ID
VCO
ACK
APC DET
BID
SYNC DET
ACC DET
BF.GEN.
VXO
P1/PS
CONV
VXO/XO
CMAIN
ACK SW
INV.
BURST DEEMP
PB CONV.
REC CONV.
C-EMP
BURST EMP
SECAM
PAL ONLY ·SECAM
LOGIC
ID COUNTER
ID START/STOP
ID INTEG
NHGEN
AFC DET
HHK
BID
CCIR PAL
AV TRANS
PAL ONLY
AFCH
VFCM
CFLL
NCL2
NCL1
SECAM
EDIT 443
JOB
PB
COMP IN
SHP OUT
EMP
Y VCC
PB VIDEO OUT LEVEL
PB Y+C OUT
PB C IN
Y GND
REC Y RF
PB Y RF
APC ADJ
C GND
CF1
C VCC
CF2
DOP
PBC RF IN
PBC OUT
REC C-RF OUT
FH/2 IN
C EMPH
BF OUT
TRAP1
TRAP2
VCO OUT
L GND
X'TAL IN
PG
X'TAL OUT
FSC OUT
CS
CK
SI
Y VCC
COMB OUT
SHP IN
VG1
TC2
TC1
Y GND
DEV.
CAR.
DEEMP IN
DEMOD OUT
L VCC
SYNC
Q217 2SA812 Y BUFFER
(F-7) Q217 Y BUFFER
R270 2200
R271 1k
C279 68p
C278 330p
R282 680
L21 150μH
C277 1
C275 12p
C276 22 6.3V
RV403 2.2k
(E-34) Q216 PB VIDEO BUFFER
Q216 2SC1623
R267 3300
R268 2200
C274 0.01 B
R389
C273 0.1
FL203
C.F
R399 6800
C360 100p
Q254 2SC1623
R281 1k
R275 1.5k
Q254 (G-6) CHROMA BUFFER
Q215 2SC1623
C271 6p
R265 68
R266 27k
C.BPF
FL202
PB C TRAP
FL201
C270 0.01 B
C269 0.01 B
R264 1500
Q215 (H-36) TRAP FREQ SW
X201 4.43MHz
C265 10 16V
(G-5) D216 MA159
(G-5) D217 MA159
R224 47k
R223 47k
R206 47k
R204 47k
Q243 2SC1623
C334 0.01 B
(G-6) Q243 FSC BUFFER
R351 1k
(G-38) Q408 2SA812
Q406-408 HALF H SHIFT CANCEL
Q409 EQ
Q405 2SC1623
Q401 XN4601
Q403 XN1501
EMPH INPUT LEVEL
R402 10k
RV401 2200
R401 L401 180 56μH
C401 56p
R409 560
L402 33μH
C403 270p
R406 1000
R405 10k
R408 4.7k
R407 1k
R325 4.7k
C452 1
C402 10 16V
R404 1k
C404 22p
R403 2200
C257 10 16V
C357 0 F
C414 22 6.3V
R246 1k 0.5%
R247 470 0.5%
C258 470p
C415 0.1
C416 18p
R428 1200
C259 390p
R426 2.7k
C417 470p
Q410 2SA812
Q410 (H-37) SUB TRACT
R430 1.5k
R427 1k
C418 0.1
R431 680
RV204 2200
R429 4.7k
RV205 4700
R248 8200
R249 2700
DEV
CAR SET
C407 0.022 B
C260 10 16V
(H-38) Q409 2SC2223
(G-38) Q407 2SC1623
(G-37) Q406 2SC1623
R425 6800
R424 680
C411 110p
R432 330k
L404 15μH
R413 1k
R410 2200
PB Y LEVEL
RV402 1k
L405 39μH
C409 180p
R419 820
C419 100p
R417 10k
R411 220
C343 110p
C413 22p
D401 1SS123
R433 120k
R415 1M
R418 10k
R416 2200
R414 2200
R421 3300
R420 820
R422 5600
R279 0
25
26
27
28
29
30
31
32
33
34
35
36
45
46
47
48
49
50
Q241 (F-34) 2SA1341
Q213 2SC1623
Q242 2SC3395
Q213,Q241,242 QUASI HD GENERATOR
(G-34)(G-8) Q226,227 CHARACTOR SWITCH
Q227 2SC3398
Q226 2SA1341
Q225 2SC1623
C295 22p
R327 1800
C296 33p
R297 1800
R304 1500
C305 470p
(G-34) Q232 BUFFER
Q232 2SC2223
C311 47p
R318 560
R319 560
RV207 2200
L221 330μH
L222 120μH
R320 27k
REC Y
C312 180p
C313 100p
C280 0.01 B
L208 10μH
C281 22 6.3V
C287 10 10V
R288 22k
R274 3900
< 1 2 3 >
< 1 2 3 4 >

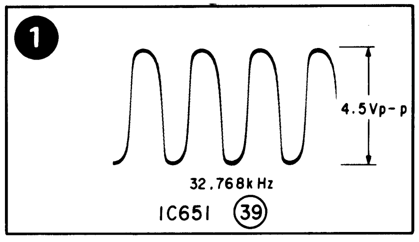
no mark : REC/PB mode
( ) : REC mode
< > : PB mode

CV-9 BOARD (1/3) (VIDEO BLOCK)

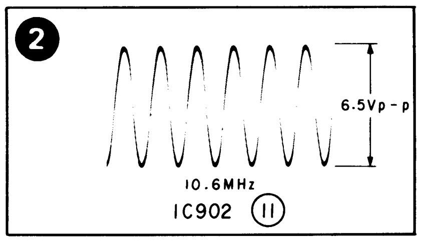
LI-10 (TITLE CONTROL), CK-19P (CAMERA FUNCTION SWITCH), DK-4P (EDIT SEARCH SWITCH) PRINTED WIRING BOARDS

— Ref. No. LI-10 BOARD: 3000 series, CK-19P BOARD: 4000 series, DK-4P BOARD:5000 series —

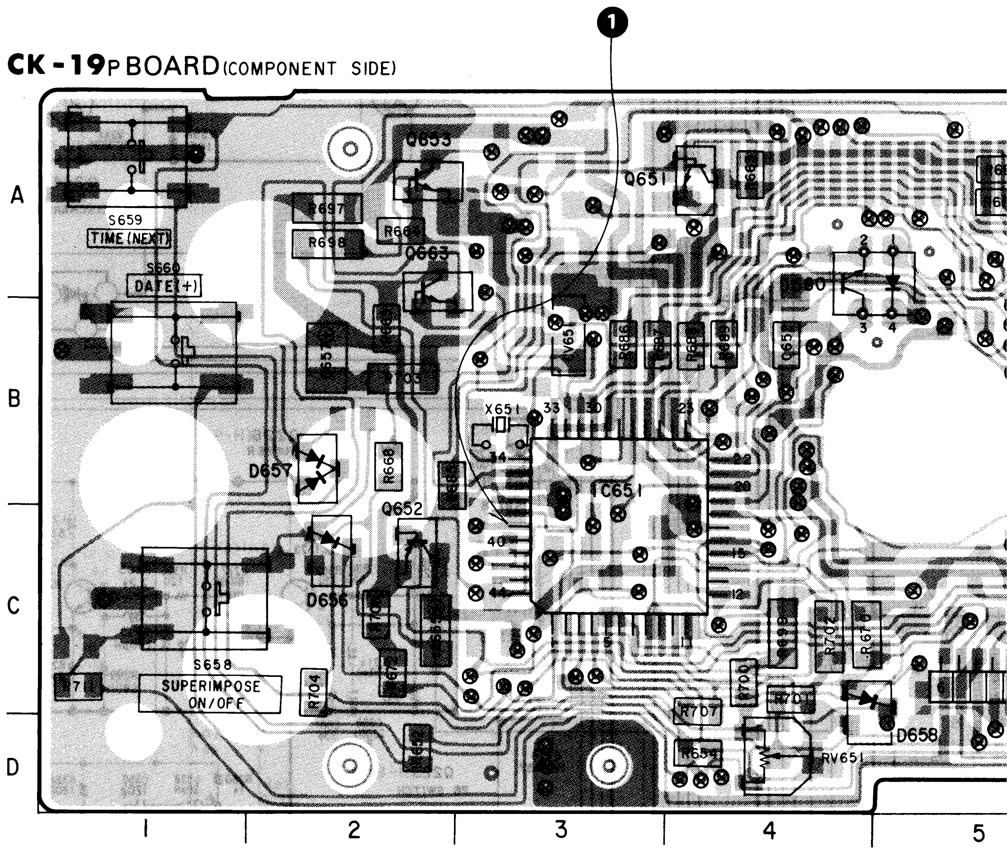
CK-19P BOARD



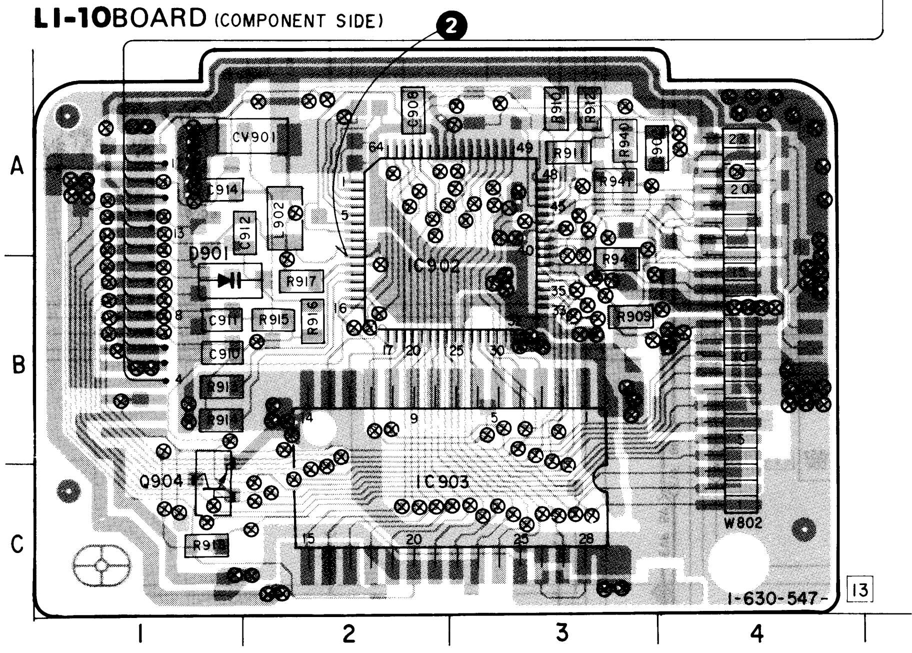
LI-10 BOARD

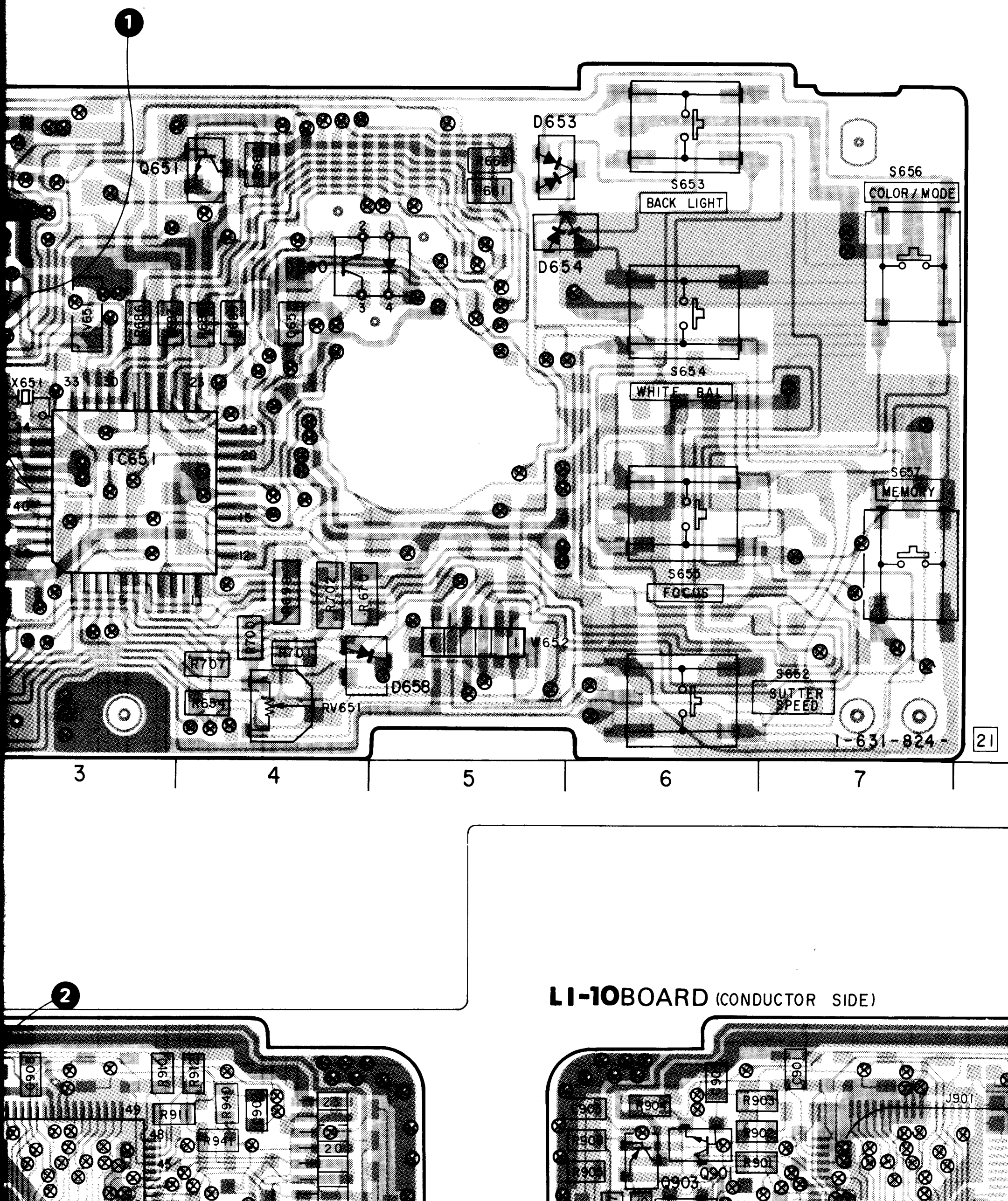


CK-19P BOARD (COMPONENT SIDE)

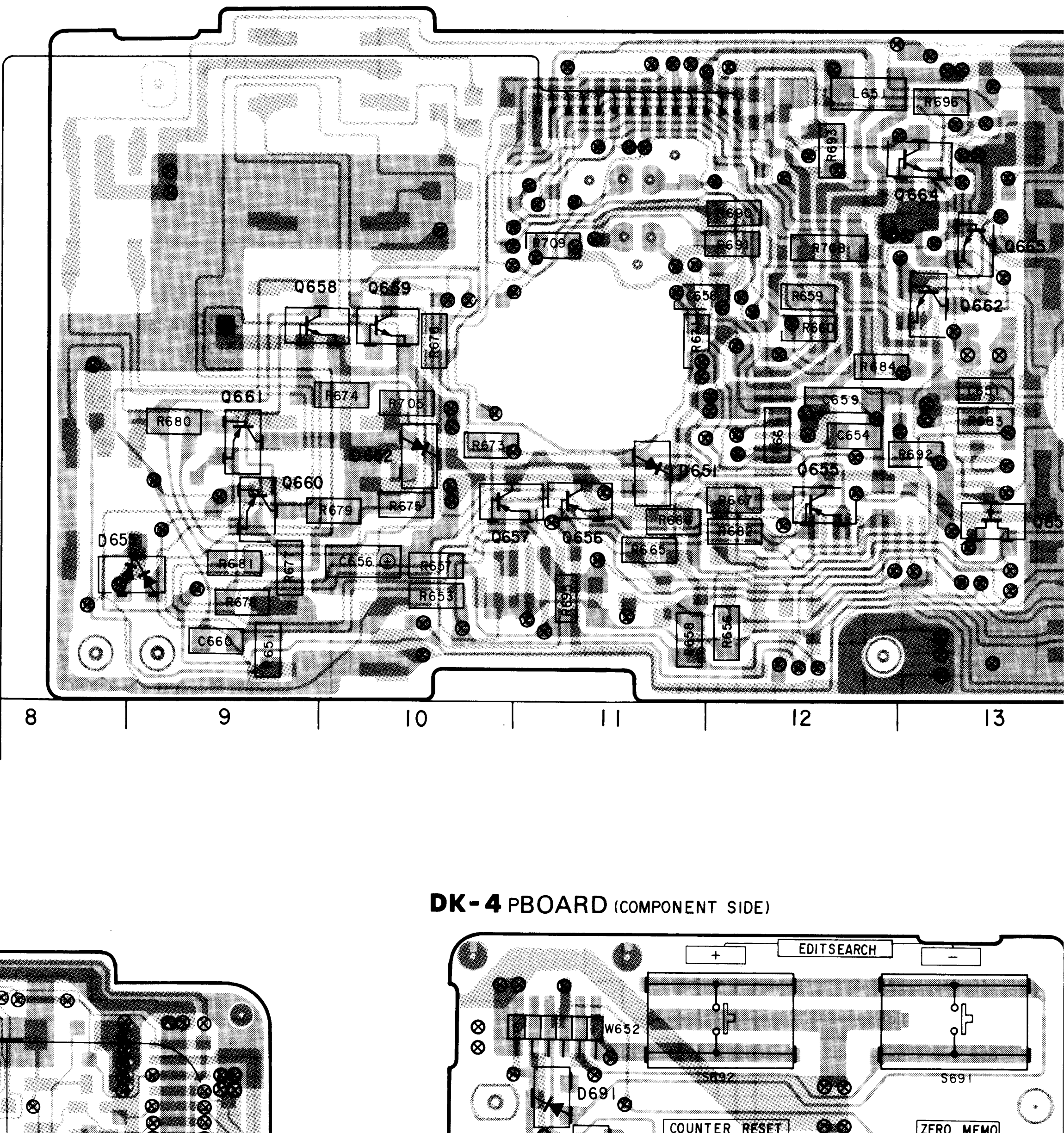

❶
A
B
C
D
1
2
3
4
5
S659
TIME (NEXT)
S660
DATE (+)
S658
SUPERIMPOSE ON/OFF
Q653
Q651
Q663
Q652
D657
D656
D658
X651
IC651
R697
R698
R668
R704
R707
RV651
33
34
40
44
23
12

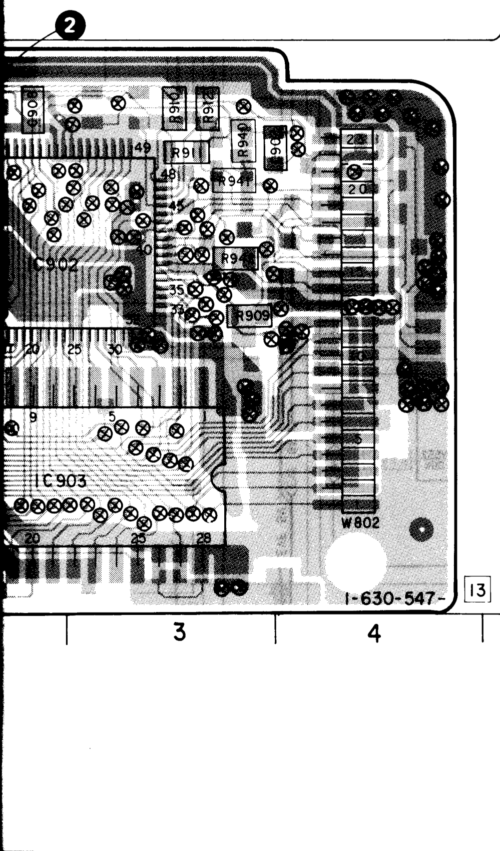
LI-10BOARD (COMPONENT SIDE)


❷
A
B
C
1
2
3
4
CV901
L914
C912
L902
D901
R917
R915
R916
C911
C910
R909
R911
Q904
R918
IC902
IC903
W802
64
49
48
45
35
16
17
20
25
30
14
9
5
15
28
1-630-547-
13

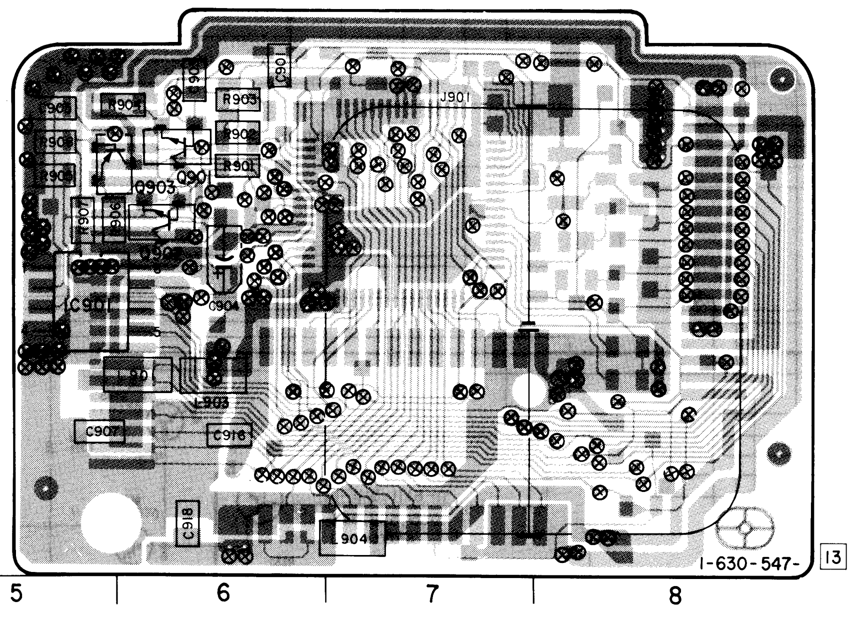

❶
D653
D654
Q651
S653
BACK LIGHT
S656
COLOR/MODE
S654
WHITE BAL
IC651
S657
MEMORY
S655
FOCUS
S652
SHUTTER SPEED
D658
RV651
W652
1-631-824-
21
3
4
5
6
7

CK-19P BOARD (CONDUCTOR SIDE)

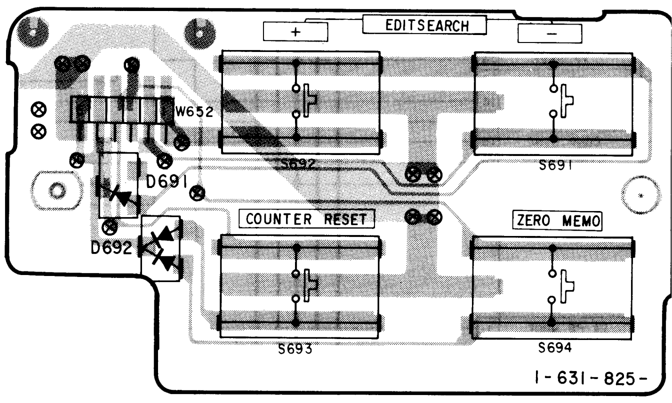

Q658
Q659
Q661
Q660
R680
R674
R705
R679
R678
C656
C660
D651
Q657
Q656
Q655
Q664
Q662
L651
R696
R659
R660
C659
C654
R684
8
9
10
11
12
13

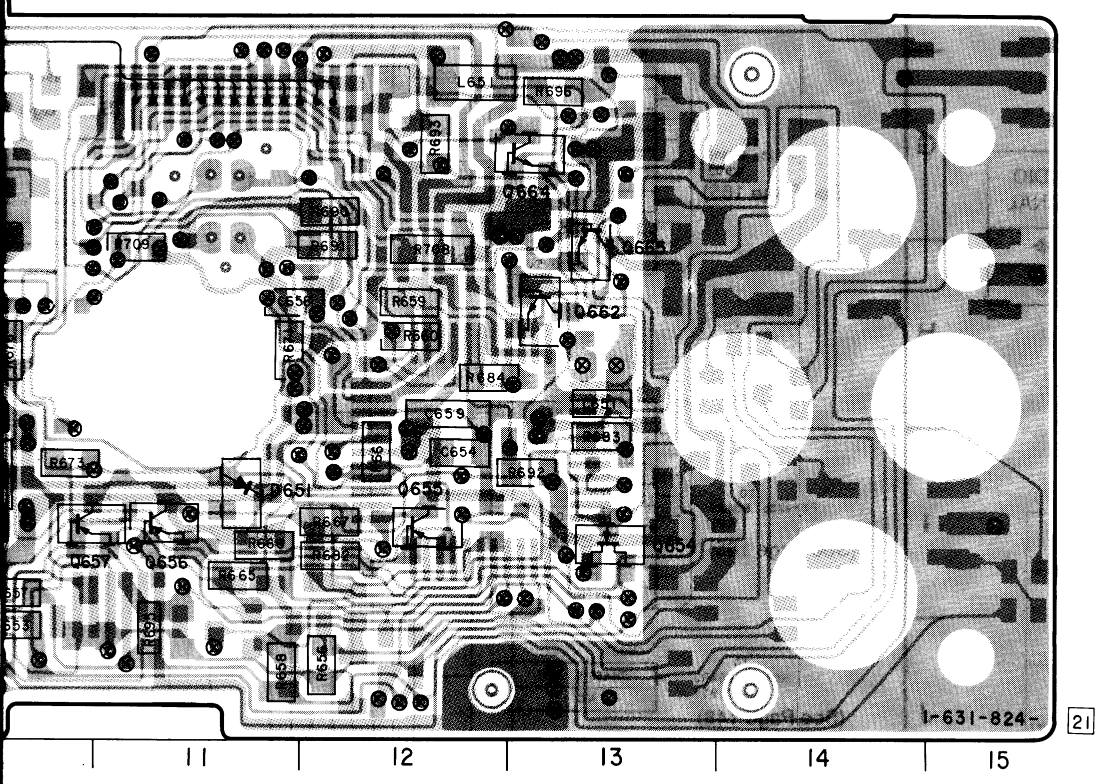

❷
IC902
IC903
R911
R909
W802
1-630-547-
13
3
4

LI-10 BOARD (CONDUCTOR SIDE)

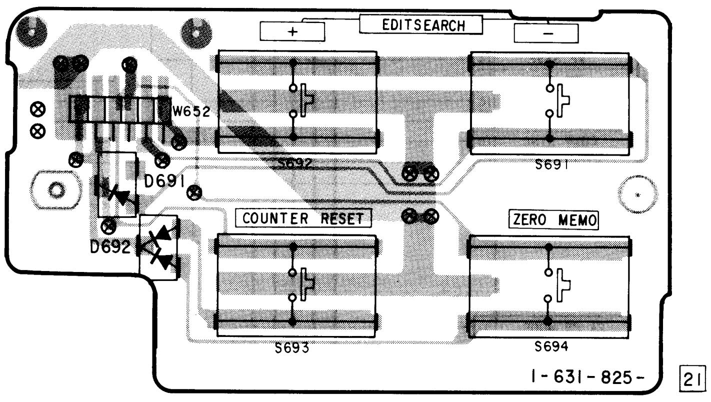

Q903
J901
C907
C916
C918
1-630-547-
13
5
6
7
8

DK-4 P BOARD (COMPONENT SIDE)

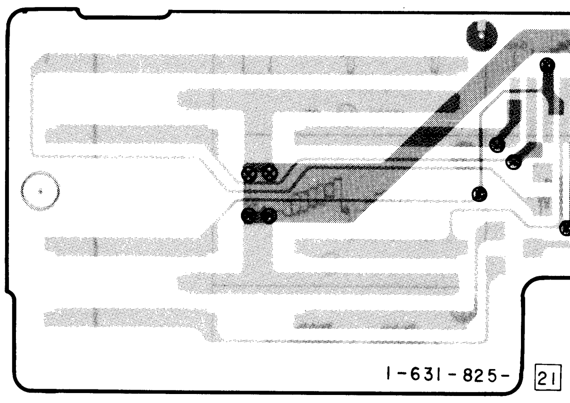

+
EDITSEARCH
−
W652
D691
D692
S692
S691
COUNTER RESET
ZERO MEMO
S693
S694
1-631-825-


L651
R696
R693
Q664
Q665
R690
R691
R709
R768
Q662
Q656
R659
R660
R671
R684
C659
C654
R673
Q651
Q655
R692
Q654
R667
Q657
Q556
R669
R682
R665
R658
R654
1-631-824-
21
11
12
13
14
15

DK-4 PBOARD (COMPONENT SIDE)

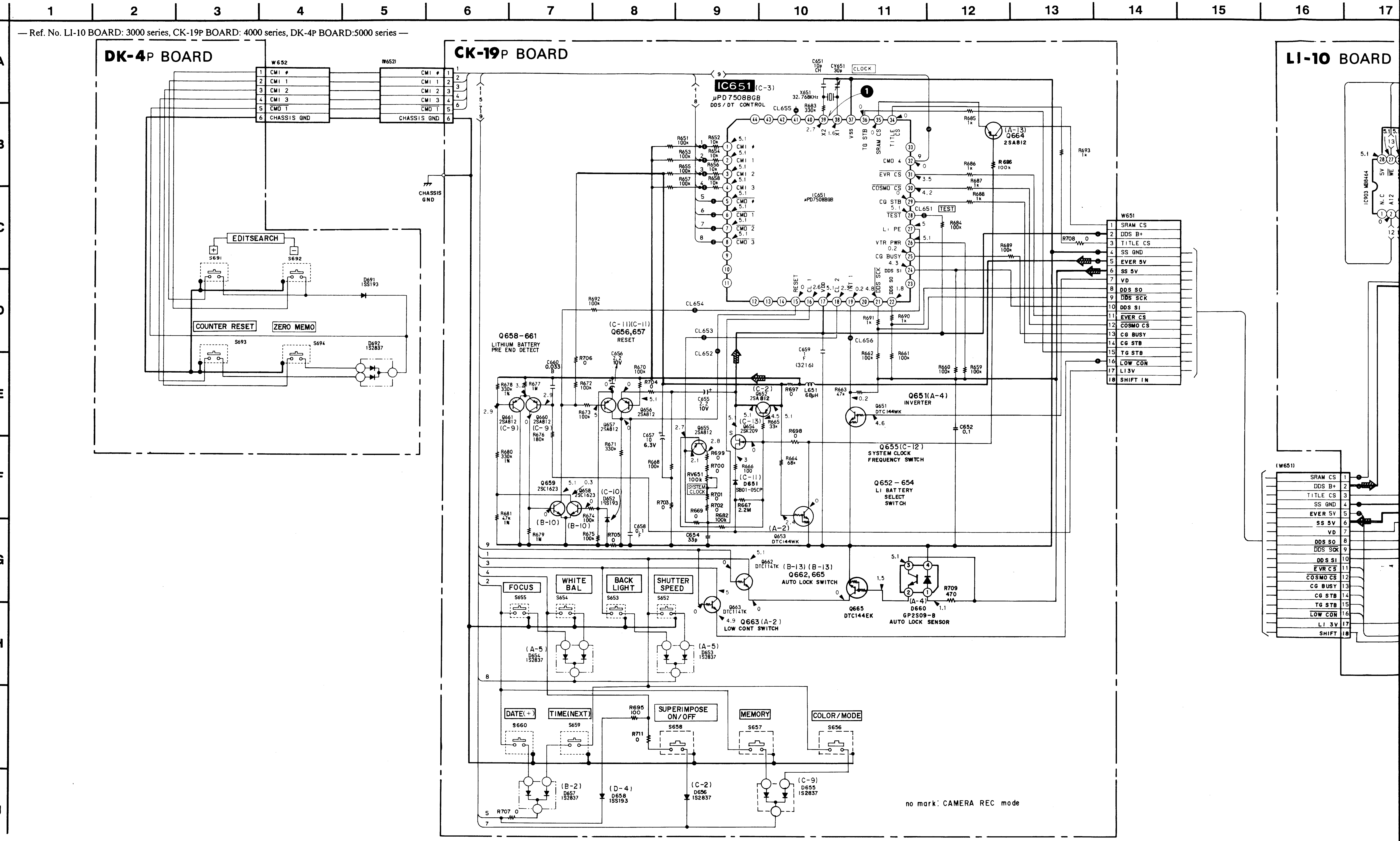

+
EDITSEARCH
−
W652
D691
D692
S692
S691
COUNTER RESET
ZERO MEMO
S693
S694
1-631-825-
21

DK-4 PBOARD (CONDUCTOR SIDE)



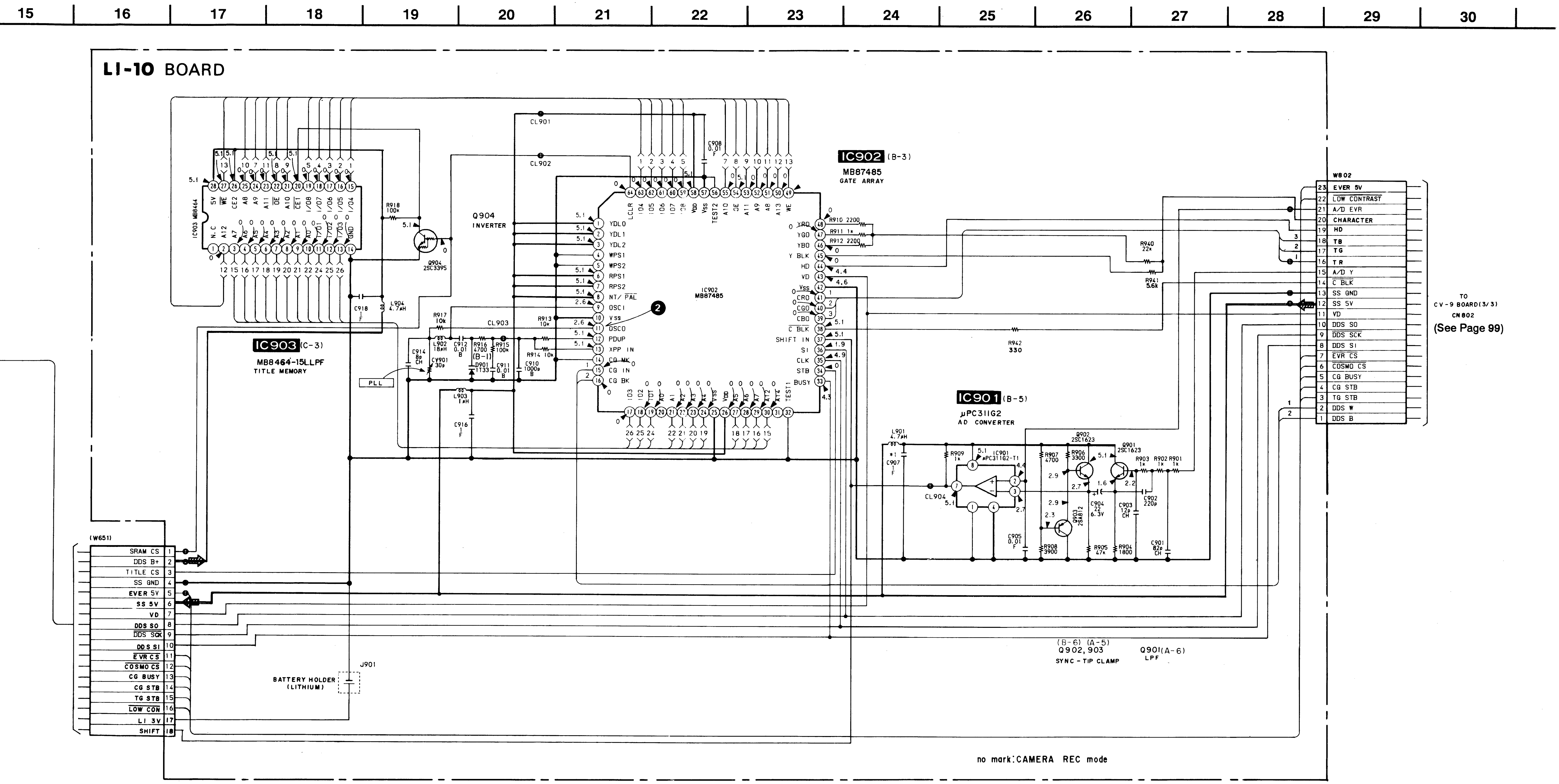
LI-10 (TITLE CONTROL), CK-19P (CAMERA FUNCTION SWITCH), DK-4P (EDIT SEARCH SWITCH) SCHEMATIC DIAGRAMS

— Ref. No. LI-10 BOARD: 3000 series, CK-19P BOARD: 4000 series, DK-4P BOARD:5000 series —



1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
17
DK-4P BOARD
W652
CMI ϕ
CMI 1
CMI 2
CMI 3
CMO 1
CHASSIS GND
EDITSEARCH
S691
S692
D691 1SS193
COUNTER RESET
ZERO MEMO
S693
S694
D692 1S2837
CK-19P BOARD
CHASSIS GND
IC651 (C-3)
μPD7508BGB
DDS/DT CONTROL
CLOCK
X651 32.768KHz
C651 10p CH
CV651 30p
TEST
CL651
CL652
CL653
CL654
CL655
CL656
TG STB
SRAM CS
TITLE CS
CMO 4
EVR CS
COSMO CS
CG STB
TEST
LI PE
VTR PWR
CG BUSY
DDS SI
DDS SO
DDS SCK
RESET
Q664 (A-13) 2SA812
Q658-661
LITHIUM BATTERY PRE END DETECT
Q656,657 (C-11)(C-11)
RESET
Q652 (C-2) 2SA812
Q654 (C-13) 2SK209
Q655 2SA812
RV651 100k
SYSTEM CLOCK
D651 SB01-05CP
Q651 (A-4)
INVERTER
Q651 DTC144WK
Q655 (C-12)
SYSTEM CLOCK FREQUENCY SWITCH
Q652 - 654
LI BATTERY SELECT SWITCH
Q653 DTC144WK
Q659 2SC1623
Q658 2SC1623
D652 1SS193
Q661 2SA812
Q660 2SA812
Q657 2SA812
Q656 2SA812
L651 68μH
Q662 DTC114TK (B-13) (B-13)
Q662,665
AUTO LOCK SWITCH
Q663 DTC114TK
Q663 (A-2)
LOW CONT SWITCH
Q665 DTC144EK
D660 GP2S09-B
AUTO LOCK SENSOR
R709 470
FOCUS
S655
WHITE BAL
S654
BACK LIGHT
S653
SHUTTER SPEED
S652
D654 1S2837 (A-5)
D653 1S2837 (A-5)
DATE(+)
S660
TIME(NEXT)
S659
SUPERIMPOSE ON/OFF
S658
MEMORY
S657
COLOR/MODE
S656
D657 1S2837 (B-2)
D658 1SS193 (D-4)
D656 1S2837 (C-2)
D655 1S2837 (C-9)
R707 0
R695 100
R711 0
W651
SRAM CS
DDS B+
TITLE CS
SS GND
EVER 5V
SS 5V
VD
DDS SO
DDS SCK
DDS SI
EVER CS
COSMO CS
CG BUSY
CG STB
TG STB
LOW CON
LI 3V
SHIFT IN
LI-10 BOARD
IC903 MB8464
(W651)
SRAM CS
DDS B+
TITLE CS
SS GND
EVER 5V
SS 5V
VD
DDS SO
DDS SCK
DDS SI
EVR CS
COSMO CS
CG BUSY
CG STB
TG STB
LOW CON
LI 3V
SHIFT

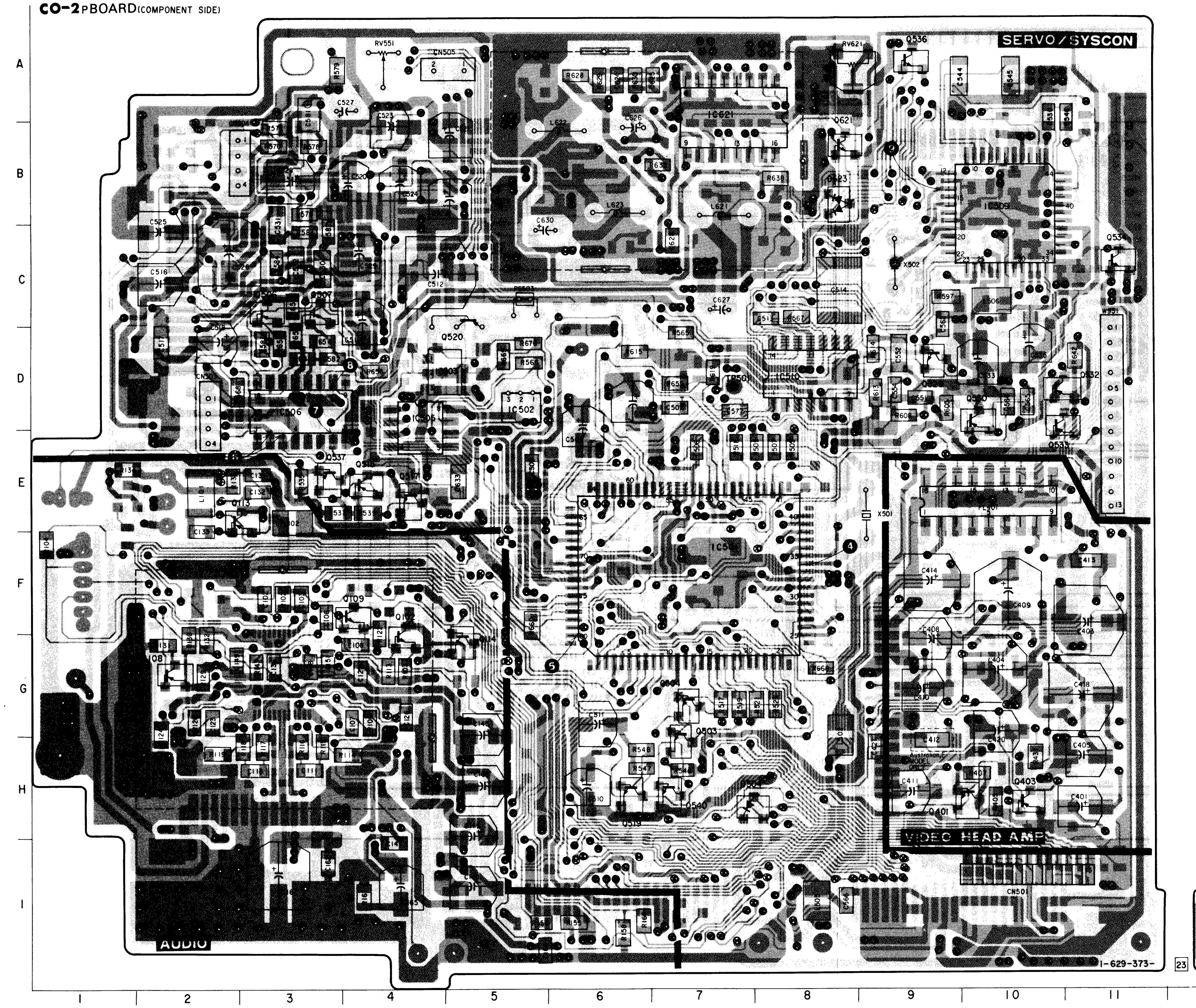
no mark: CAMERA REC mode


15
16
17
18
19
20
21
22
23
24
25
26
27
28
29
30
LI-10 BOARD
IC903 (C-3)
MB8464-15LLPF
TITLE MEMORY
IC902 (B-3)
MB87485
GATE ARRAY
IC901 (B-5)
μPC311G2
AD CONVERTER
Q904
INVERTER
Q904 2SC3395
CL901
CL902
CL903
CL904
PLL
YDL0
YDL1
YDL2
WPS1
WPS2
RPS1
RPS2
NT/PAL
OSC I
Vss
OSCO
PDUP
XPP IN
CG WK
CG IN
CG BK
YRO
YGO
YBO
Y BLK
HD
VD
Vss
CRO
CGO
CBO
C BLK
SHIFT IN
SI
CLK
STB
BUSY
W802
23 EVER 5V
22 LOW CONTRAST
21 A/D EVR
20 CHARACTER
19 HD
18 TB
17 TG
16 TR
15 A/D Y
14 C BLK
13 SS GND
12 SS 5V
11 VD
10 DDS SO
9 DDS SCK
8 DDS SI
7 EVR CS
6 COSMO CS
5 CG BUSY
4 CG STB
3 TG STB
2 DDS W
1 DDS B
TO CV-9 BOARD(3/3)
CN802
(See Page 99)
(W651)
SRAM CS 1
DDS B+ 2
TITLE CS 3
SS GND 4
EVER 5V 5
SS 5V 6
VD 7
DDS SO 8
DDS SCK 9
DDS SI 10
EVR CS 11
COSMO CS 12
CG BUSY 13
CG STB 14
TG STB 15
LOW CON 16
LI 3V 17
SHIFT 18
J901
BATTERY HOLDER
(LITHIUM)
Q902 2SC1623
Q901 2SC1623
Q903 2SA812
IC901 μPC3111G2-T1
(B-6) (A-5)
Q902, 903
SYNC-TIP CLAMP
Q901(A-6)
LPF
no mark:CAMERA REC mode

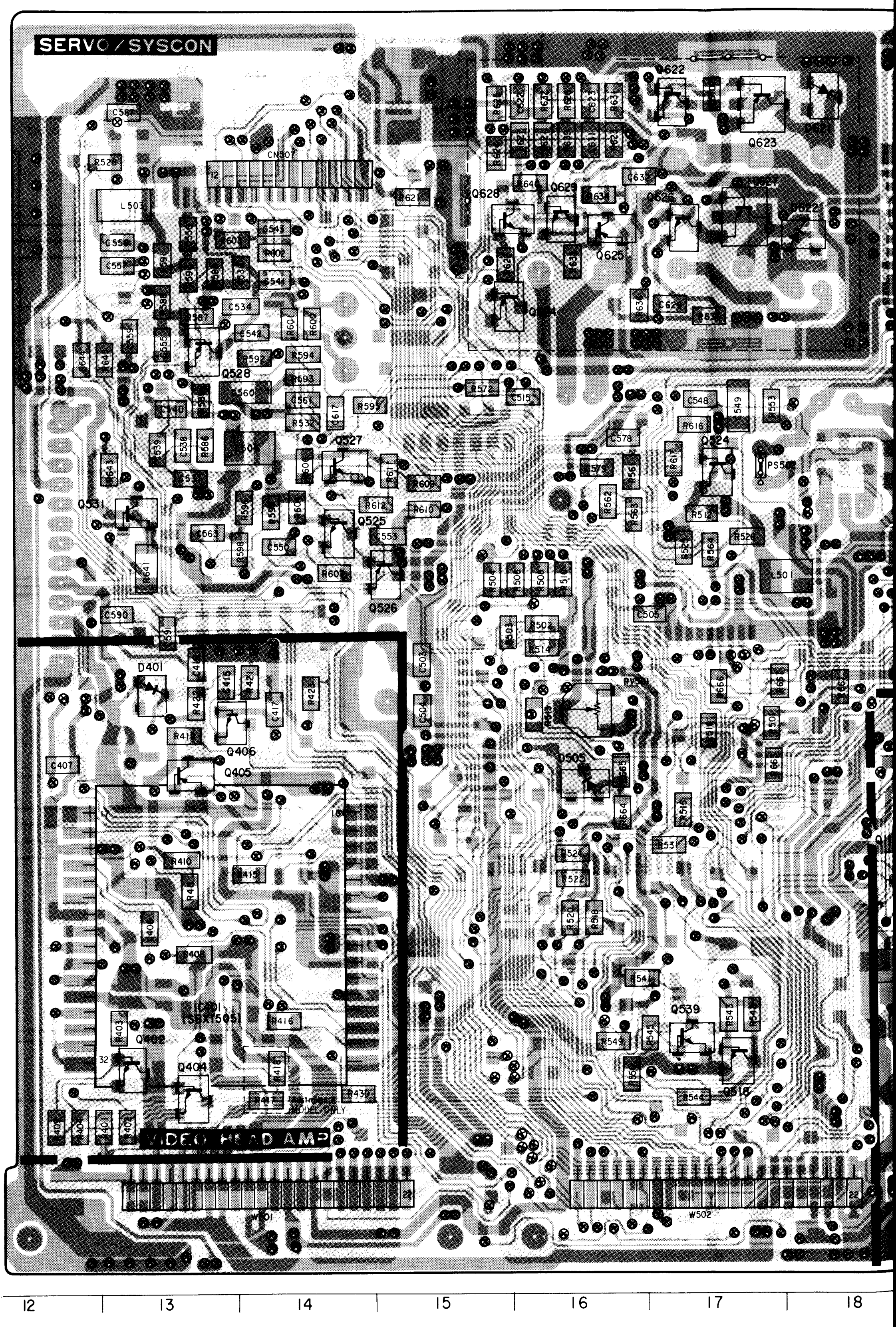
CO-2P (HEAD AMP, AUDIO/SERVO, SYSTEM CONTROL), CC-26P (TFG/SFG AMP), KS-6P (CAPSTAN MOTOR DRIVE JUNCTION), FP-89 (TAPE END SENSOR), FP-90 (TAPE TOP SENSOR) PRINTED WIRING BOARDS

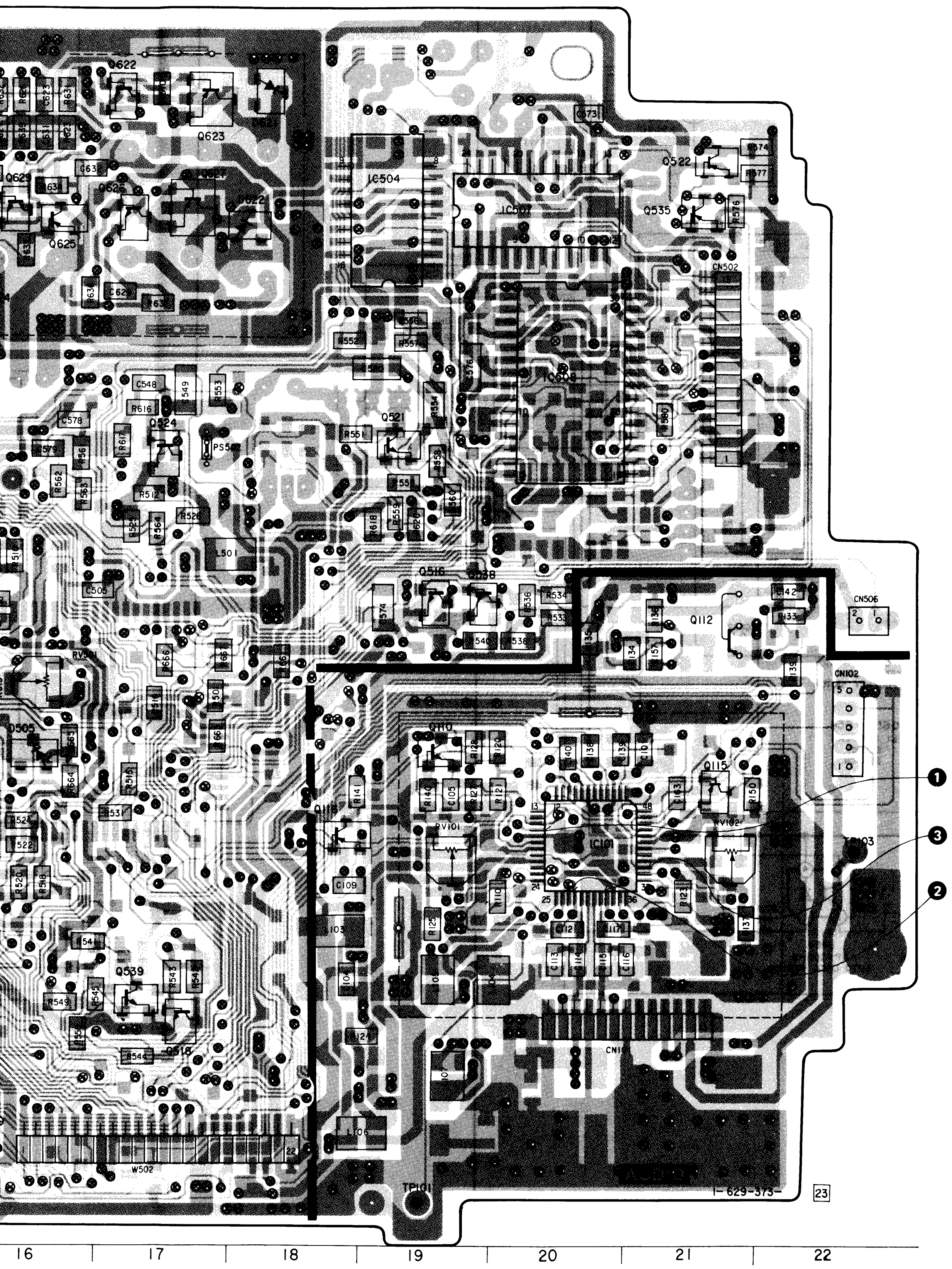
— Ref. No. CO-2P, FP-89 BOARDS: 6000 series, CC-26PBOARD: 7000 series, FP-90, KS-6P BOARDS: 8000 series —

CO-2PBOARD(COMPONENT SIDE)

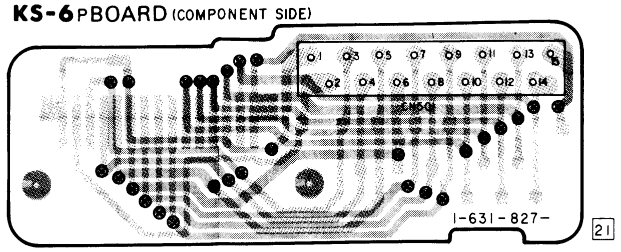

A
B
C
D
E
F
G
H
I
1
2
3
4
5
6
7
8
9
10
11
SERVO/SYSCON
AUDIO
VIDEO HEAD AMP
IC621
IC509
IC501
IC502
IC505
IC106
X501
X502
CN501
CN505
W501
1-629-373-
23

CO-2PBOARD(CONDUCTOR SIDE)

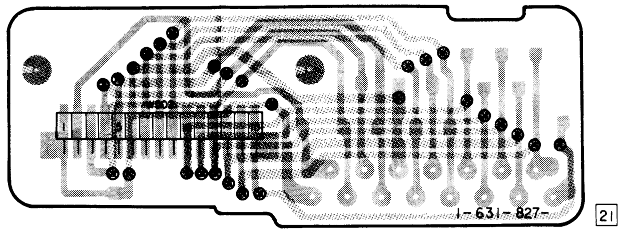

SERVO/SYSCON
VIDEO HEAD AMP
CN507
W501
W502
12
13
14
15
16
17
18


Q622
Q623
Q625
IC504
IC502
IC506
Q522
Q535
CN502
Q524
Q521
Q516
Q538
Q112
CN506
CN102
Q118
IC101
Q115
RV101
RV102
Q539
Q518
L501
CN101
W502
TP101
1-629-373-
23
❶
❸
❷
16
17
18
19
20
21
22

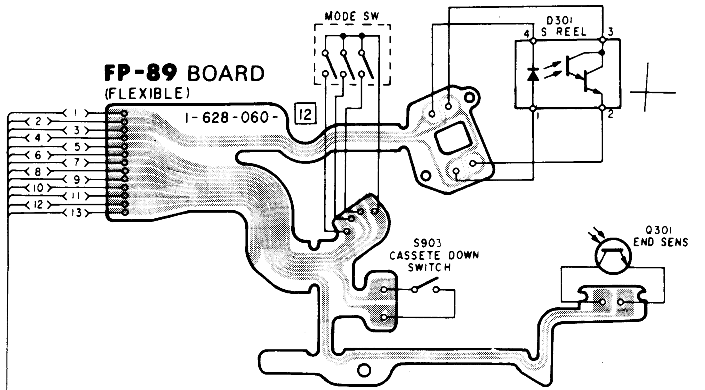
KS-6 P BOARD (COMPONENT SIDE)


CN601
1-631-827-
21

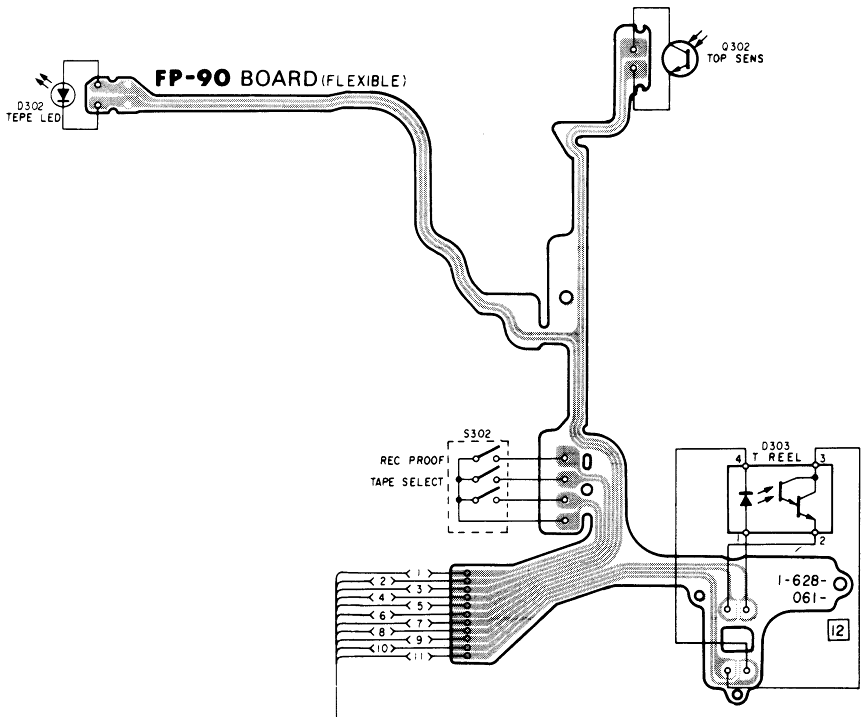
KS-6 P BOARD (CONDUCTOR SIDE)



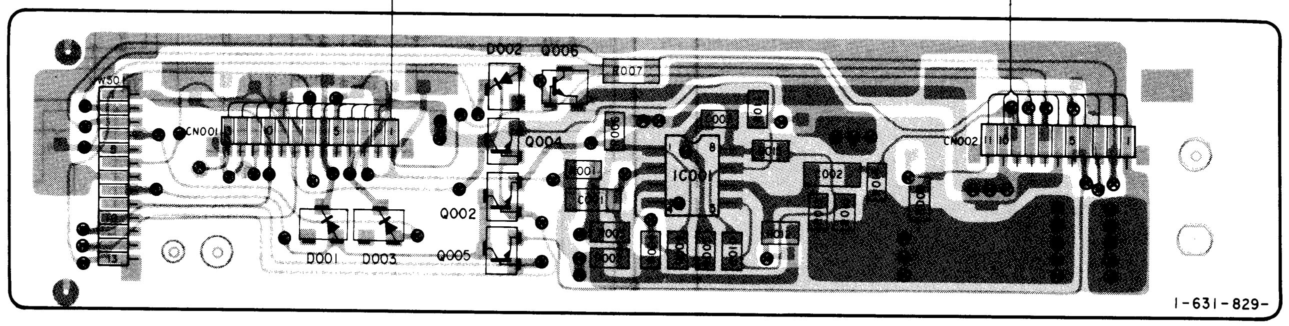
FP-89 BOARD (FLEXIBLE)


MODE SW
D301
S REEL
1-628-060-
12
S903
CASSETE DOWN
SWITCH
Q301
END SENS

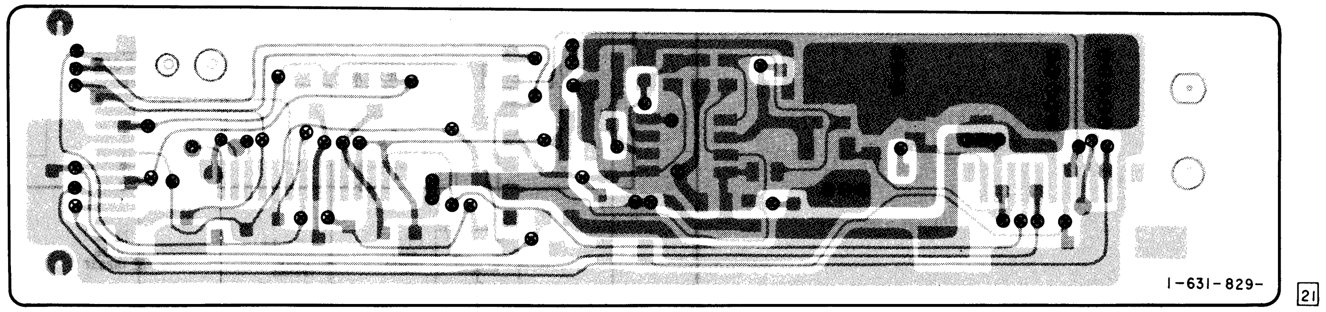
FP-90 BOARD (FLEXIBLE)


D302
TEPE LED
Q302
TOP SENS
S302
REC PROOF!
TAPE SELECT
D303
T REEL
1-628-061-
12

CC-26 P BOARD (COMPONENT SIDE)

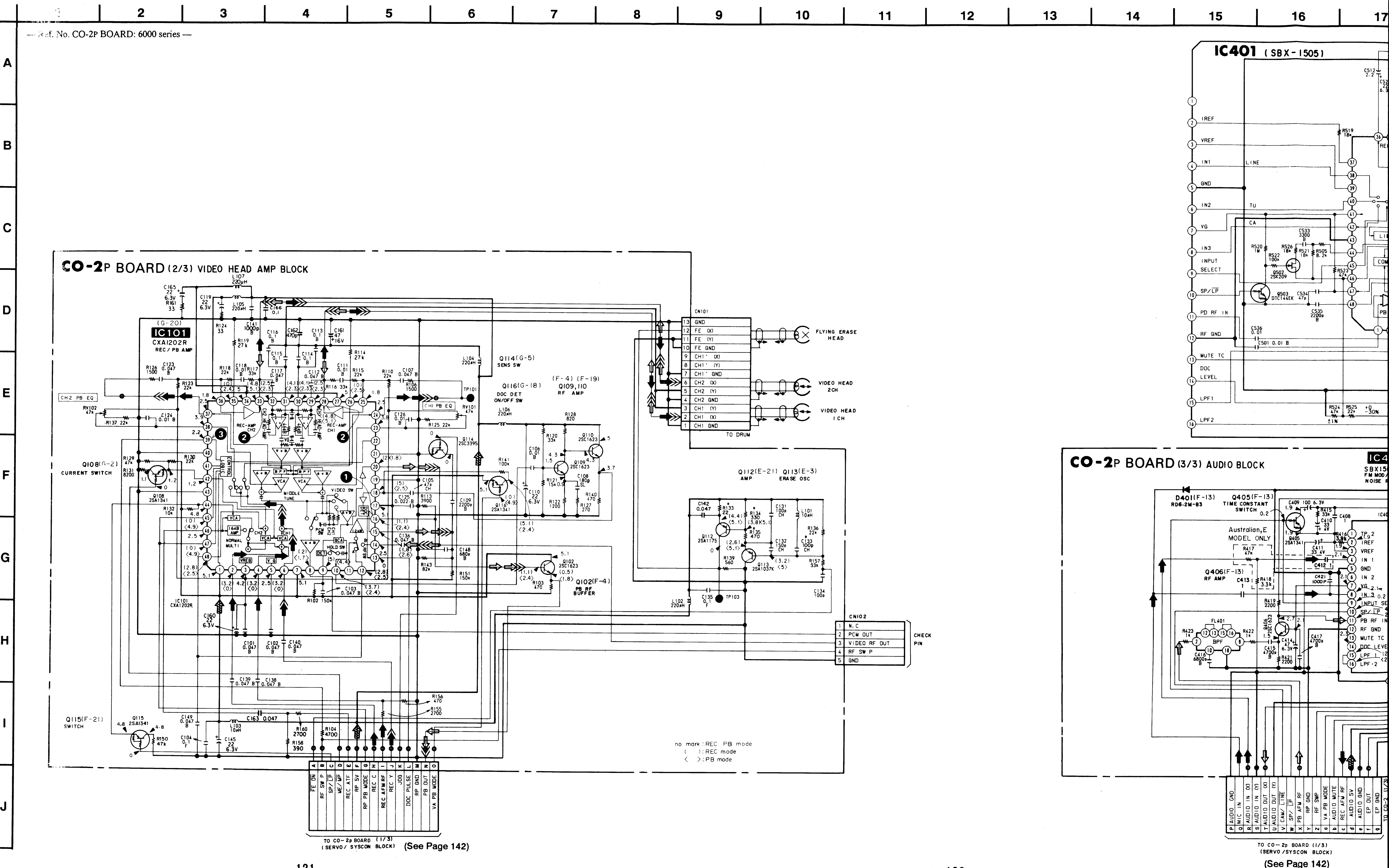

CN001
CN002
D002
Q006
Q004
Q002
Q005
D001
D003
IC001
1-631-829-

CC-26 P BOARD (CONDUCTOR SIDE)



CO-2P (HEAD AMP, AUDIO/SERVO, SYSTEM CONTROL) SCHEMATIC DIAGRAMS

— Ref. No. CO-2P BOARD: 6000 series —


2
3
4
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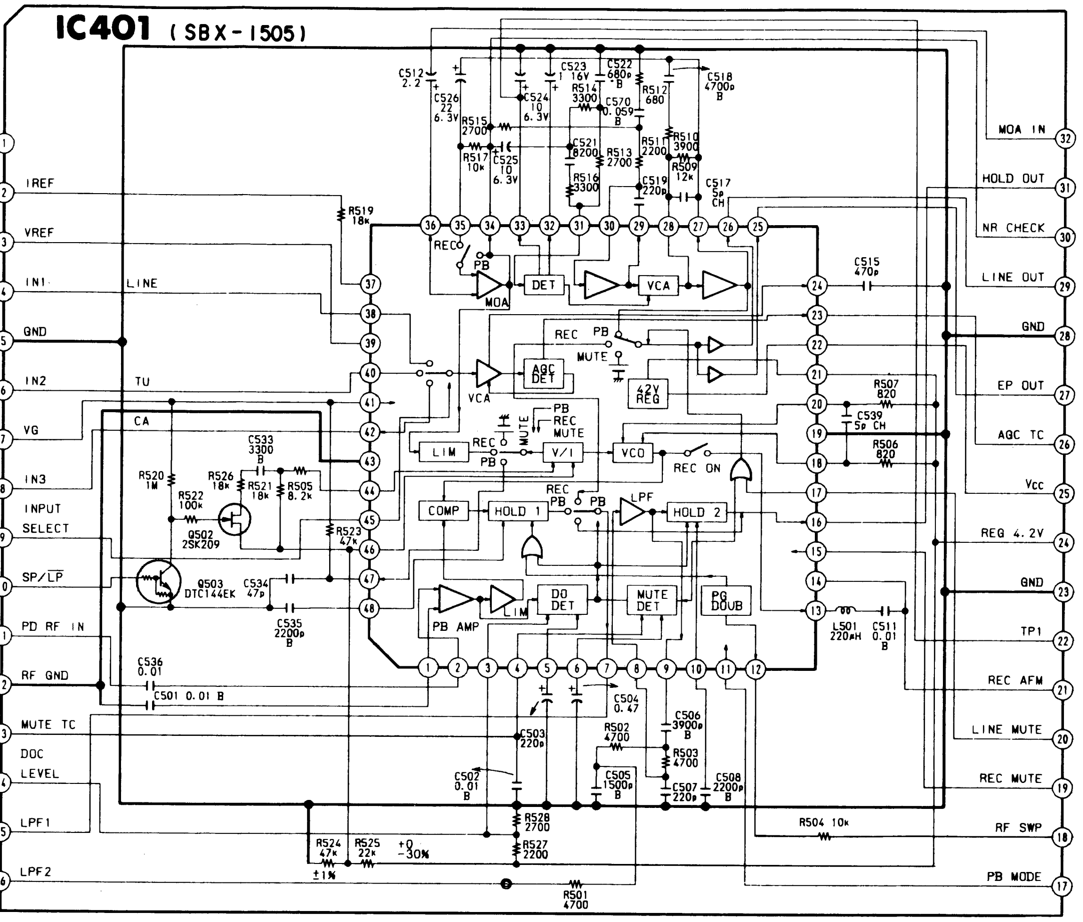
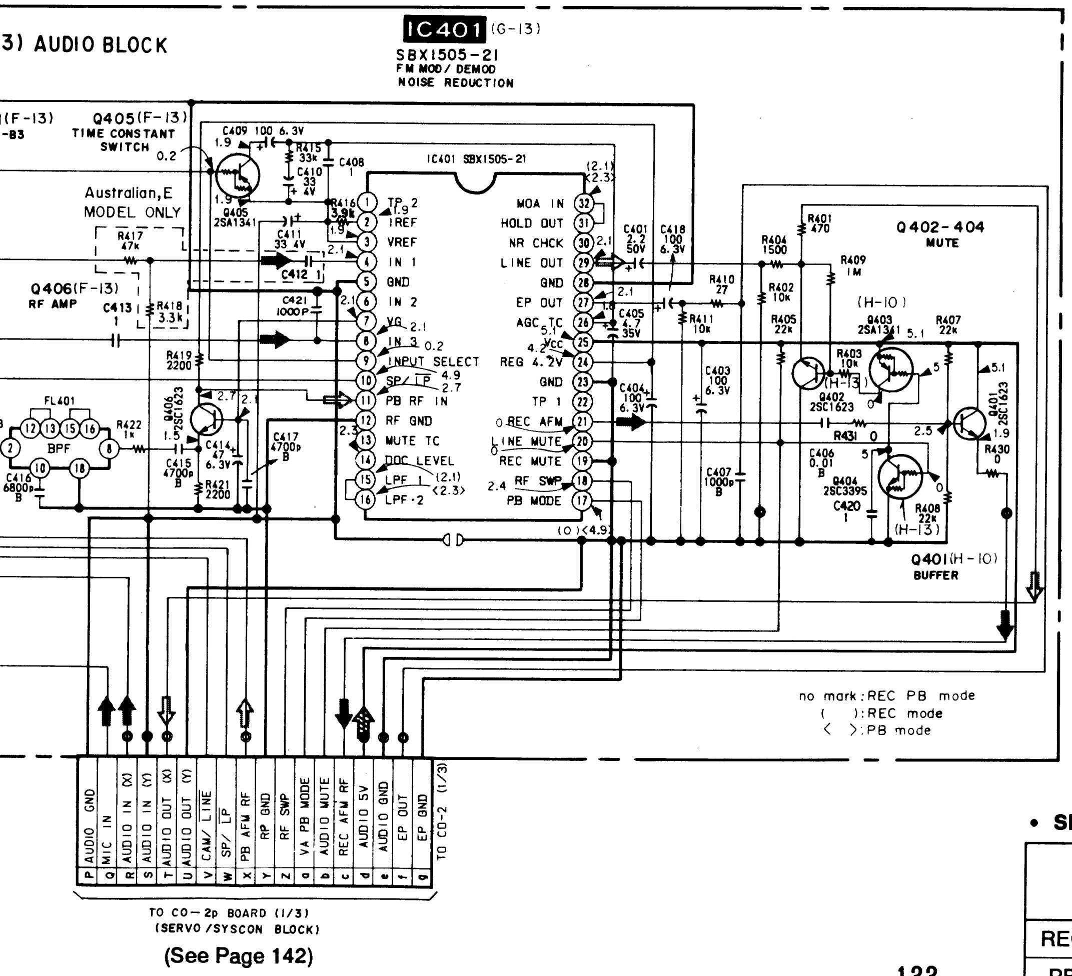
6
7
8
9
10
11
12
13
14
15
16
17
A
B
C
D
E
F
G
H
I
J
CO-2P BOARD (2/3) VIDEO HEAD AMP BLOCK
IC101
CXA1202R
REC/PB AMP
(G-20)
CH2 PB EQ
RV102 47k
R137 22k
Q108(G-2) CURRENT SWITCH
Q108 2SA1341
Q115(F-21) SWITCH
Q115 2SA1341
Q114(G-5) SENS SW
Q114 2SC3395
Q116(G-18) DOC DET ON/OFF SW
Q116 2SA1341
(F-4) (F-19) Q109,110 RF AMP
Q109 2SC1623
Q110 2SC1623
Q102(F-4) PB RF BUFFER
Q102 2SC1623
Q112(E-21) AMP
Q113(E-3) ERASE OSC
Q112 2SA1175
Q113 2SA1037K
CH1 PB EQ
TP101
TP103
REC-AMP CH2
REC-AMP CH1
MIDDLE TUNE
VIDEO SW
HOLD SW
NORMAL MULTI
VREG
CN101
13 GND
12 FE (X)
11 FE (Y)
10 FE GND
9 CH1' (X)
8 CH1' (Y)
7 CH1' GND
6 CH2 (X)
5 CH2 (Y)
4 CH2 GND
3 CH1 (Y)
2 CH1 (X)
1 CH1 GND
TO DRUM
FLYING ERASE HEAD
VIDEO HEAD 2CH
VIDEO HEAD 1CH
CN102
1 N.C
2 PCM OUT
3 VIDEO RF OUT
4 RF SW P
5 GND
CHECK PIN
no mark : REC PB mode
( ) : REC mode
< > : PB mode
A FE ON
B RF SW P
C SP/LP
D WE/WP
E REC ATF
F RP 5V
G RP PB MODE
H REC C
I REC AFM RF
J REC Y
K JOG
L DOC PULSE
M RP GND
N PB OUT
O VA PB MODE
TO CO-2P BOARD (1/3) (SERVO/SYSCON BLOCK)
(See Page 142)
IC401 (SBX-1505)
1
2 IREF
3 VREF
4 IN1
5 GND
6 IN2
7 VG
8 IN3
9 INPUT SELECT
10 SP/LP
11 PD RF IN
12 RF GND
13 MUTE TC
14 DOC LEVEL
15 LPF1
16 LPF2
Q502 2SK209
Q503 DTC144EK
CO-2P BOARD (3/3) AUDIO BLOCK
D401(F-13) RD6.2M-B3
Q405(F-13) TIME CONSTANT SWITCH
Q405 2SA1341
Australian,E MODEL ONLY
Q406(F-13) RF AMP
Q406 2SC1623
FL401 BPF
P AUDIO GND
Q MIC IN
R AUDIO IN (X)
S AUDIO IN (Y)
T AUDIO OUT (X)
U AUDIO OUT (Y)
V CAM/LINE
W SP/LP
X PB AFM RF
Y RP GND
Z RP SWP
a VA PB MODE
b REC AFM RF
c AUDIO 5V
d AUDIO GND
e EP OUT
f EP GND
TO CO-2P BOARD (1/3) (SERVO/SYSCON BLOCK)
(See Page 142)

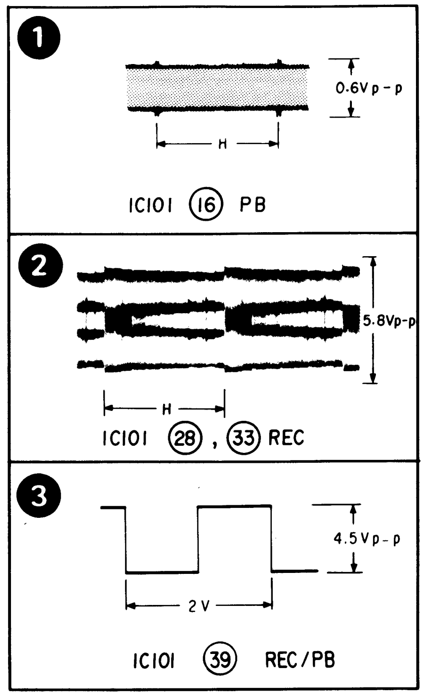

IC401 (SBX-1505)
IREF
VREF
IN1
LINE
GND
IN2
TU
VG
CA
IN3
INPUT SELECT
SP/LP
PD RF IN
RF GND
MUTE TC
DOC LEVEL
LPF1
LPF2
MOA IN
HOLD OUT
NR CHECK
LINE OUT
GND
EP OUT
AGC TC
Vcc
REG 4.2V
GND
TP1
REC AFM
LINE MUTE
REC MUTE
RF SWP
PB MODE
MOA
DET
VCA
AGC DET
4.2V REG
LIM
V/I
VCO
REC ON
COMP
HOLD 1
LPF
HOLD 2
PB AMP
DO DET
MUTE DET
PG DOUB
REC
PB
MUTE
Q502 2SK209
Q503 DTC144EK
L501 220μH
R504 10k
R501 4700
R524 47k
R525 22k
±1N
+0 -30%

3) AUDIO BLOCK


IC401 (G-13)
SBX1505-21
FM MOD/DEMOD
NOISE REDUCTION
Q405(F-13)
TIME CONSTANT SWITCH
Australian,E MODEL ONLY
Q406(F-13)
RF AMP
FL401
BPF
IC401 SBX1505-21
TP 2
IREF
VREF
IN 1
GND
IN 2
VG
IN 3
INPUT SELECT
SP/LP
PB RF IN
RF GND
MUTE TC
DOC LEVEL
LPF 1
LPF 2
MOA IN
HOLD OUT
NR CHCK
LINE OUT
GND
EP OUT
AGC TC
Vcc
REG 4.2V
GND
TP 1
REC AFM
LINE MUTE
REC MUTE
RF SWP
PB MODE
Q402-404
MUTE
Q403 2SA1341
Q402 2SC1623
Q404 2SC3395
Q401 2SC1623
Q401(H-10)
BUFFER
no mark:REC PB mode
( ):REC mode
〈 〉:PB mode
AUDIO GND
MIC IN
AUDIO IN (X)
AUDIO IN (Y)
AUDIO OUT (X)
AUDIO OUT (Y)
CAM/LINE
SP/LP
PB AFM RF
RP GND
RF SWP
VA PB MODE
AUDIO MUTE
REC AFM RF
AUDIO 5V
AUDIO GND
EP OUT
EP GND
TO CO-2 (1/3)

TO CO-2p BOARD (1/3)
(SERVO/SYSCON BLOCK)
(See Page 142)

CO-2P BOARD (HEADAMP)



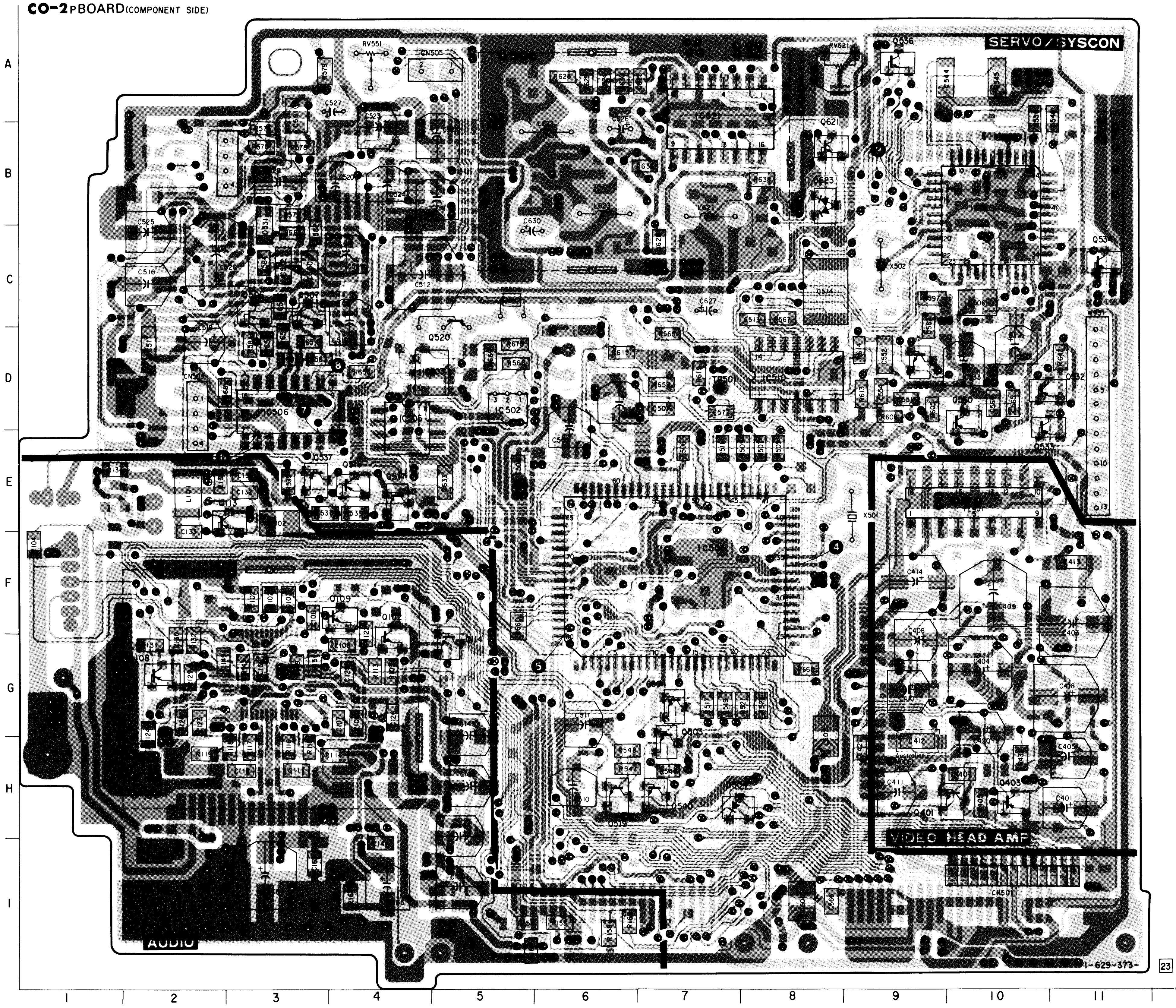
- **SIGNAL PATH**

	VIDEO SIGNAL			AUDIO SIGNAL
	CHROMA	Y	Y/CHROMA/DATA	
REC	➡	➡	➡≫	➡
PB			⇨≫	⇨

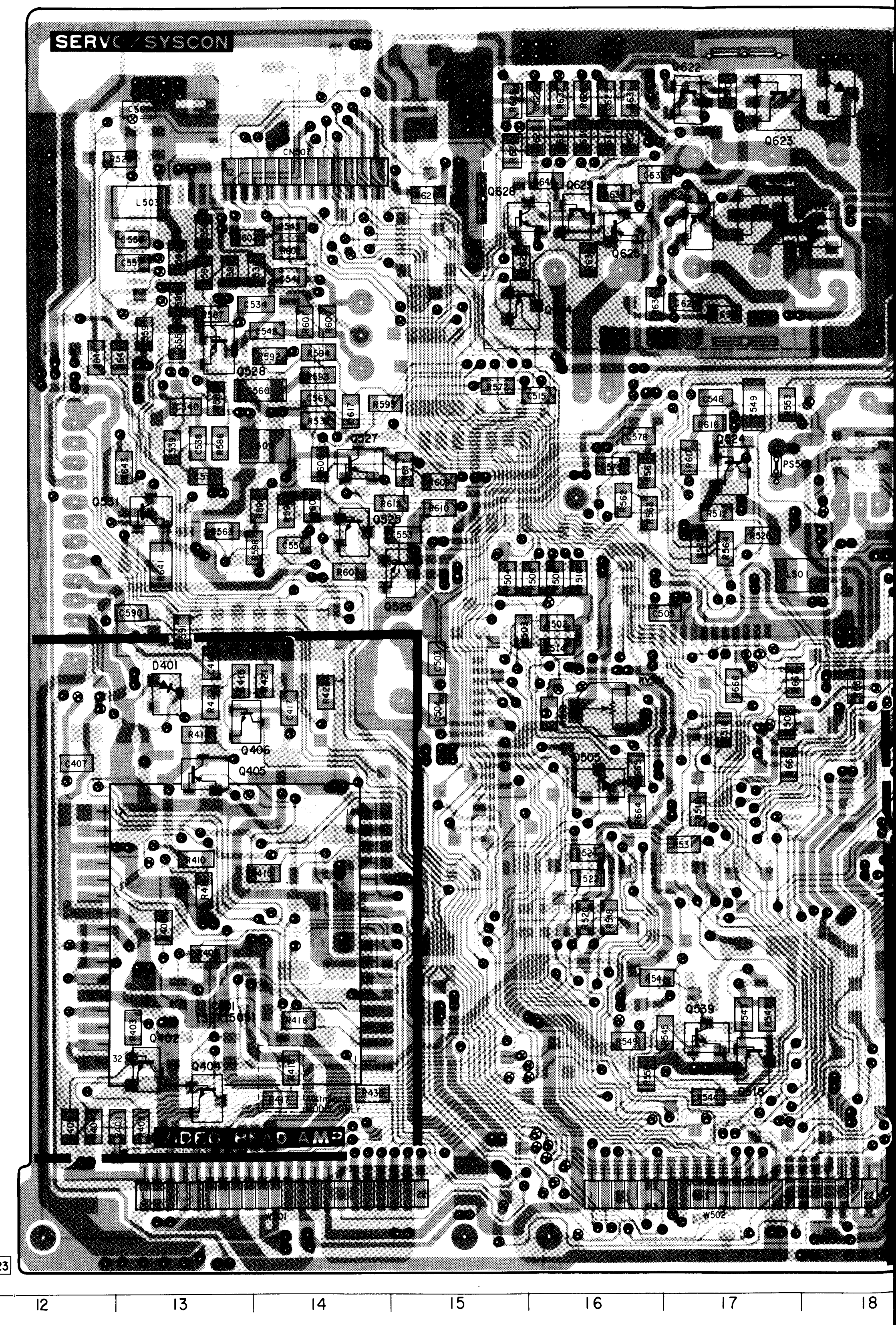
CO-2P (HEAD AMP, AUDIO/SERVO, SYSTEM CONTROL), CC-26P (TFG/SFG AMP), KS-6P (CAPSTAN MOTOR DRIVE JUNCTION), FP-89 (TAPE END SENSOR), FP-90 (TAPE TOP SENSOR) PRINTED WIRING BOARDS

— Ref. No. CO-2P, FP-89 BOARDS: 6000 series, CC-26PBOARD: 7000 series, FP-90, KS-6P BOARDS: 8000 series —

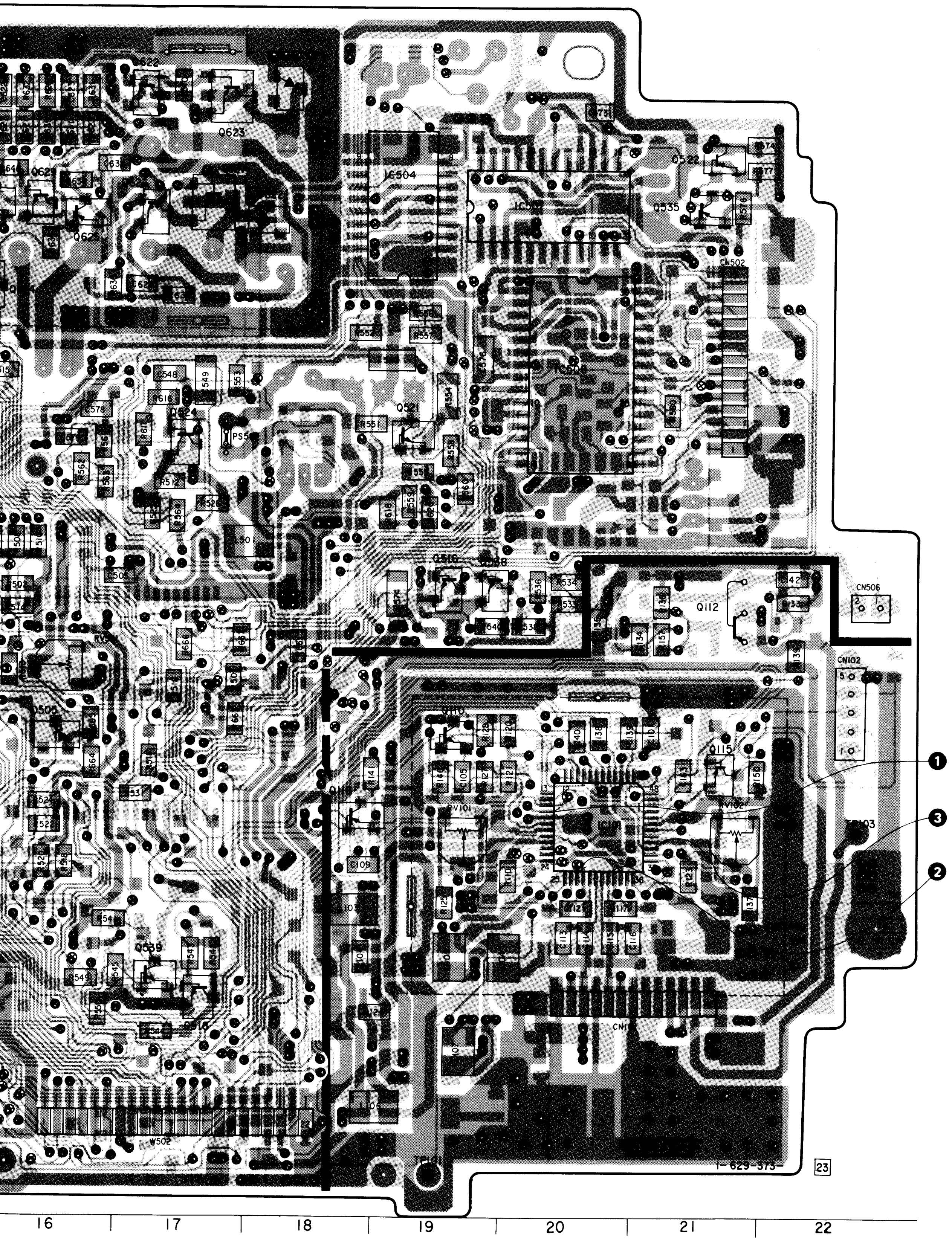
CO-2PBOARD (COMPONENT SIDE)


SERVO/SYSCON
VIDEO HEAD AMP
AUDIO
IC501
IC502
IC505
IC506
IC510
IC621
X501
X502
CN501
CN505
RV551
RV621
1-629-373-
23
A
B
C
D
E
F
G
H
I
1
2
3
4
5
6
7
8
9
10
11

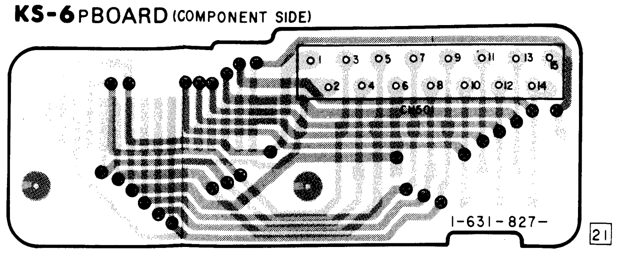
CO-2PBOARD (CONDUCTOR SIDE)


SERVO/SYSCON
VIDEO HEAD AMP
W501
W502
12
13
14
15
16
17
18

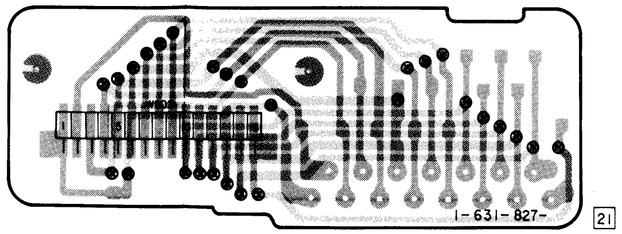
SERVO/SYSTEM CONTROL SERVO/SYSTEM CONTROL


Q622
Q623
IC504
Q522
Q535
CN502
IC508
Q521
Q524
L501
Q518
Q112
CN506
CN102
Q110
Q115
RV101
RV102
IC101
TP103
Q505
Q539
W502
CN1
TP101
1-629-373-
23
16
17
18
19
20
21
22

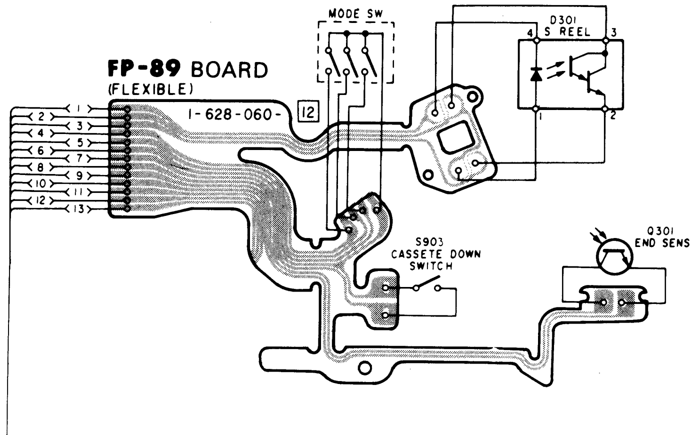
KS-6 P BOARD (COMPONENT SIDE)


O1 O3 O5 O7 O9 O11 O13
O2 O4 O6 O8 O10 O12 O14
1-631-827-
21

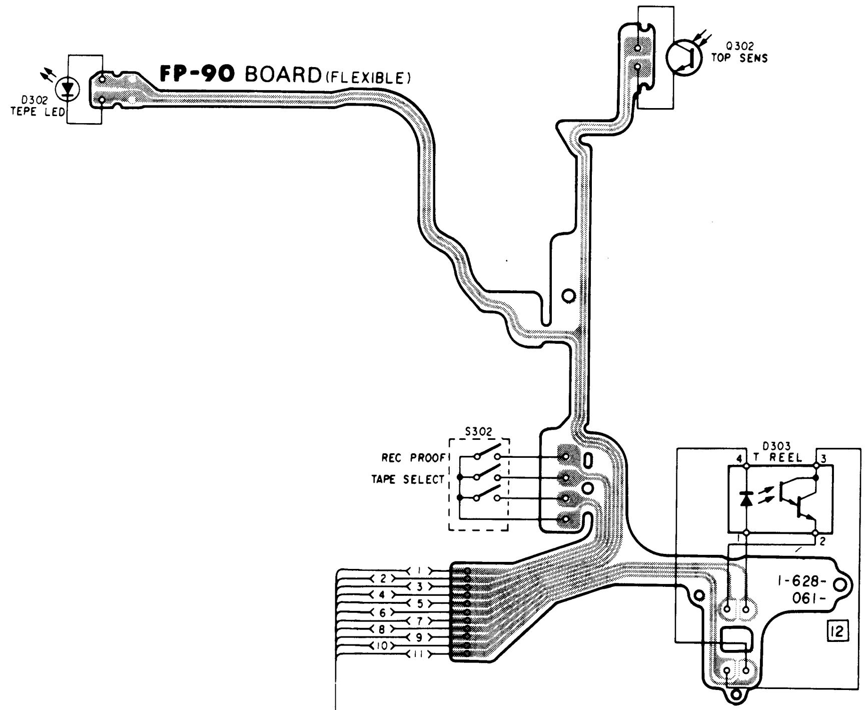
KS-6 P BOARD (CONDUCTOR SIDE)



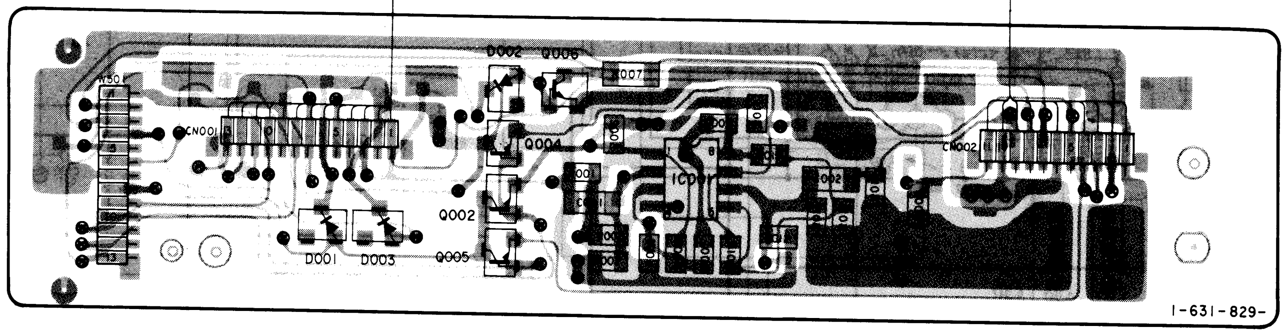
FP-89 BOARD
(FLEXIBLE)


MODE SW
D301
S REEL
1-628-060-
12
S903
CASSETE DOWN
SWITCH
Q301
END SENS
1
2
3
4
5
6
7
8
9
10
11
12
13

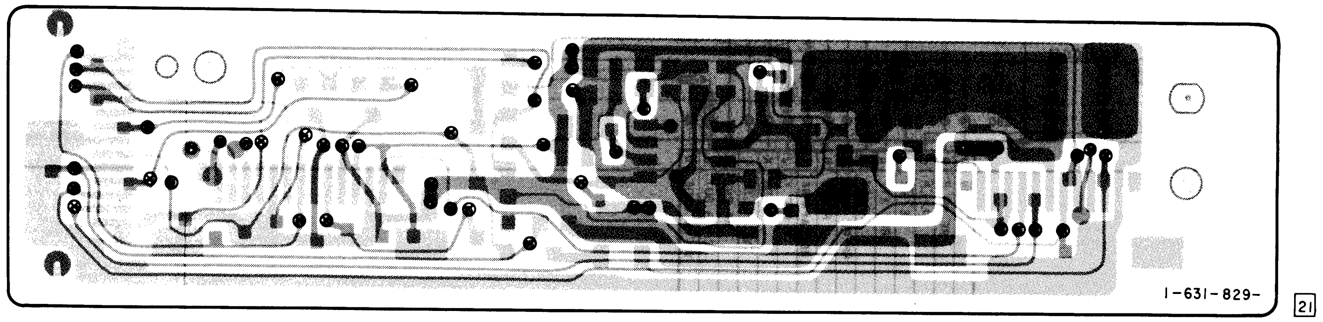
FP-90 BOARD (FLEXIBLE)


D302
TEPE LED
Q302
TOP SENS
S302
REC PROOF
TAPE SELECT
D303
T REEL
1-628-
061-
12
1
2
3
4
5
6
7
8
9
10
11

CC-26 P BOARD (COMPONENT SIDE)


CN001
CN002
IC001
Q001
Q002
Q004
Q005
Q006
Q007
D001
D003
1-631-829-

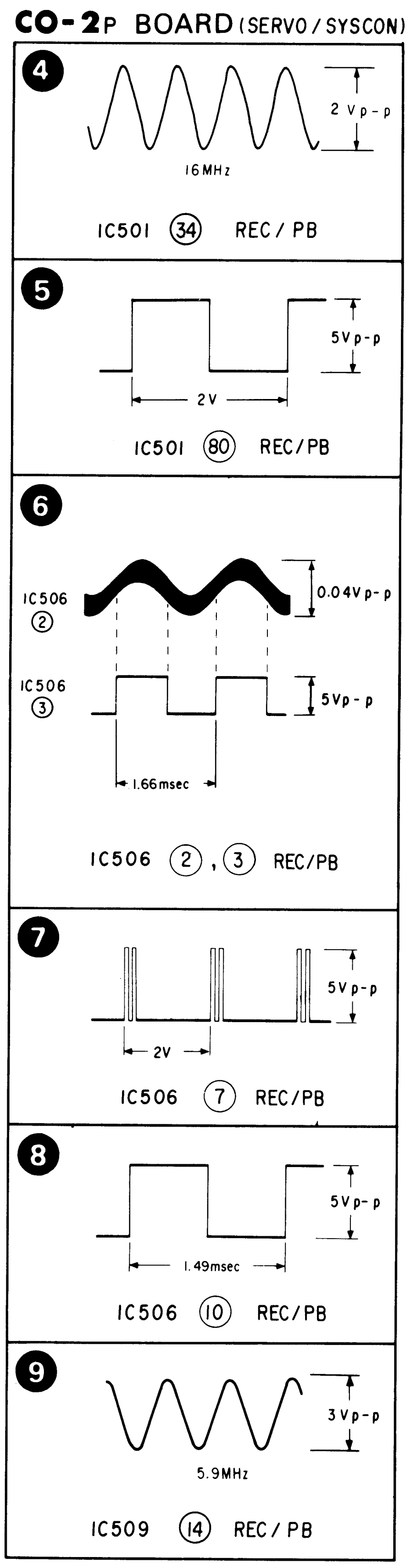
CC-26 P BOARD (CONDUCTOR SIDE)

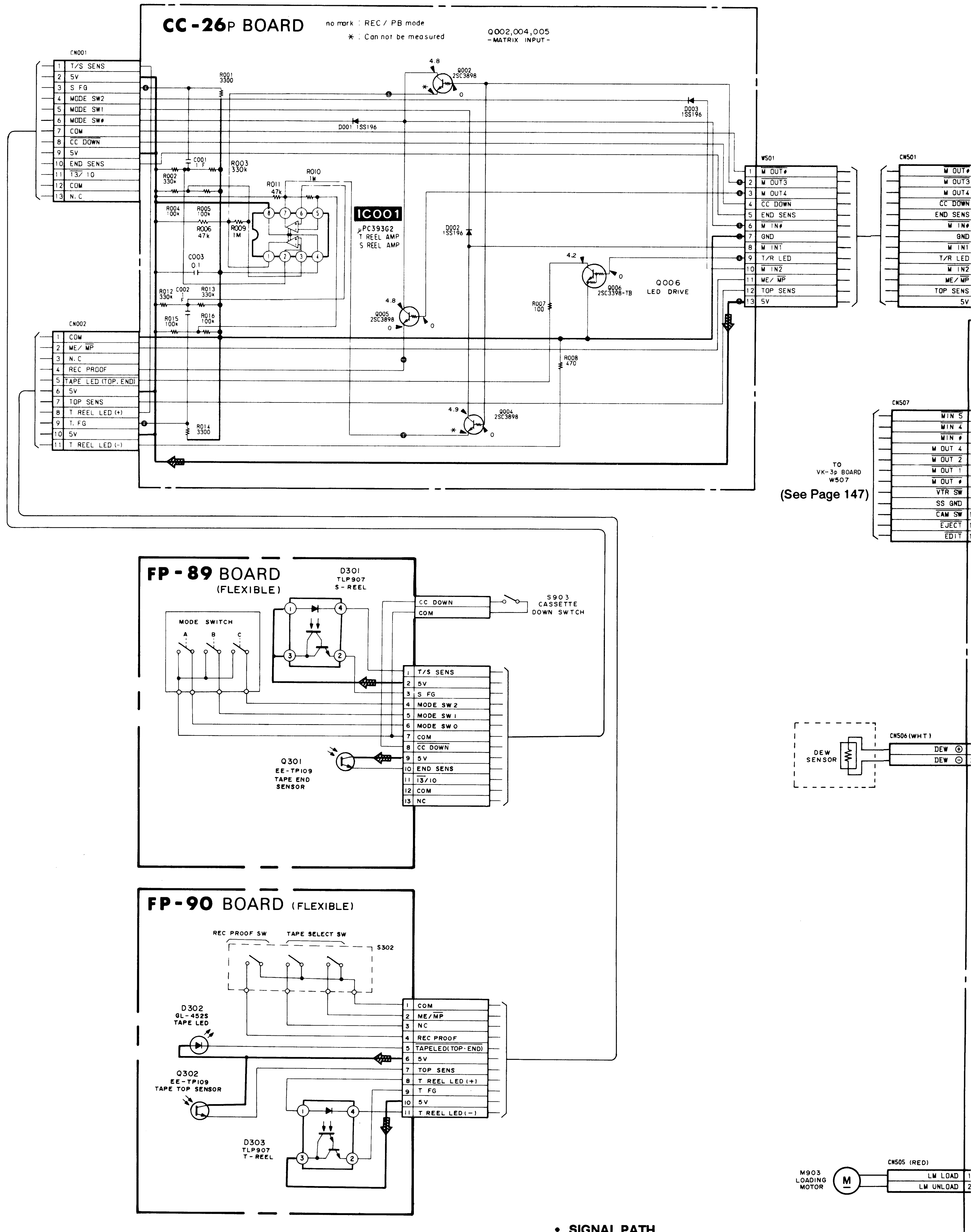


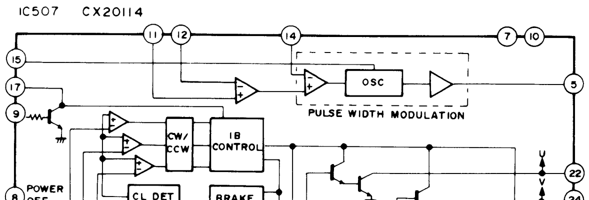
CO-2P (HEAD AMP, AUDIO/SERVO, SYSTEM CONTROL), CC-26P (TFG/SFG AMP), KS-6P (CAPSTAN MOTOR DRIVE JUNCTION), FP-8

— Ref. No. CO-2P, FP-89 BOARDS: 6000 series, CC-26PBOARD: 7000 series, FP-90, KS-6P BOARDS: 8000 series —

CO-2P BOARD (SERVO/SYSCON)




1
2
3
4
5
6
7
8
9
A
B
C
D
E
F
G
H
I
J
K
L
CC-26P BOARD
no mark : REC / PB mode
* : Can not be measured
Q002,004,005
-MATRIX INPUT-
CN001
1 T/S SENS
2 5V
3 S FG
4 MODE SW2
5 MODE SW1
6 MODE SWφ
7 COM
8 CC DOWN
9 5V
10 END SENS
11 13/10
12 COM
13 N.C
R001 3300
C001 1 F
R002 330k
R003 330k
R004 100k
R005 100k
R006 47k
R009 1M
R010 1M
R011 47k
C003 0.1
R012 330k
C002 1 F
R013 330k
R015 100k
R016 100k
R014 3300
IC001
μPC393G2
T REEL AMP
S REEL AMP
D001 1SS196
D002 1SS196
D003 1SS196
4.8
Q002 2SC3898
4.8
Q005 2SC3898
4.9
Q004 2SC3898
4.2
Q006 2SC3398-TB
Q006 LED DRIVE
R007 100
R008 470
CN002
1 COM
2 ME/MP
3 N.C
4 REC PROOF
5 TAPE LED (TOP. END)
6 5V
7 TOP SENS
8 T REEL LED (+)
9 T. FG
10 5V
11 T REEL LED (-)
W501
1 M OUTφ
2 M OUT3
3 M OUT4
4 CC DOWN
5 END SENS
6 M INφ
7 GND
8 M IN1
9 T/R LED
10 M IN2
11 ME/MP
12 TOP SENS
13 5V
CN501
M OUTφ
M OUT3
M OUT4
CC DOWN
END SENS
M INφ
GND
M IN1
T/R LED
M IN2
ME/MP
TOP SENS
5V
CN507
MIN 5
MIN 4
MIN φ
M OUT 4
M OUT 2
M OUT 1
M OUT φ
VTR SW
SS GND
CAM SW
EJECT
EDIT
TO VK-3P BOARD W507
(See Page 147)
FP-89 BOARD (FLEXIBLE)
D301 TLP907 S-REEL
MODE SWITCH
A B C
CC DOWN
COM
S903 CASSETTE DOWN SWTCH
1 T/S SENS
2 5V
3 S FG
4 MODE SW 2
5 MODE SW 1
6 MODE SW 0
7 COM
8 CC DOWN
9 5V
10 END SENS
11 13/10
12 COM
13 NC
Q301 EE-TP109 TAPE END SENSOR
FP-90 BOARD (FLEXIBLE)
REC PROOF SW
TAPE SELECT SW
S302
D302 GL-452S TAPE LED
Q302 EE-TP109 TAPE TOP SENSOR
D303 TLP907 T-REEL
1 COM
2 ME/MP
3 NC
4 REC PROOF
5 TAPELED(TOP·END)
6 5V
7 TOP SENS
8 T REEL LED (+)
9 T FG
10 5V
11 T REEL LED (-)
DEW SENSOR
CN506 (WHT)
DEW ⊕
DEW ⊖
M903 LOADING MOTOR
M
CN505 (RED)
LM LOAD
LM UNLOAD

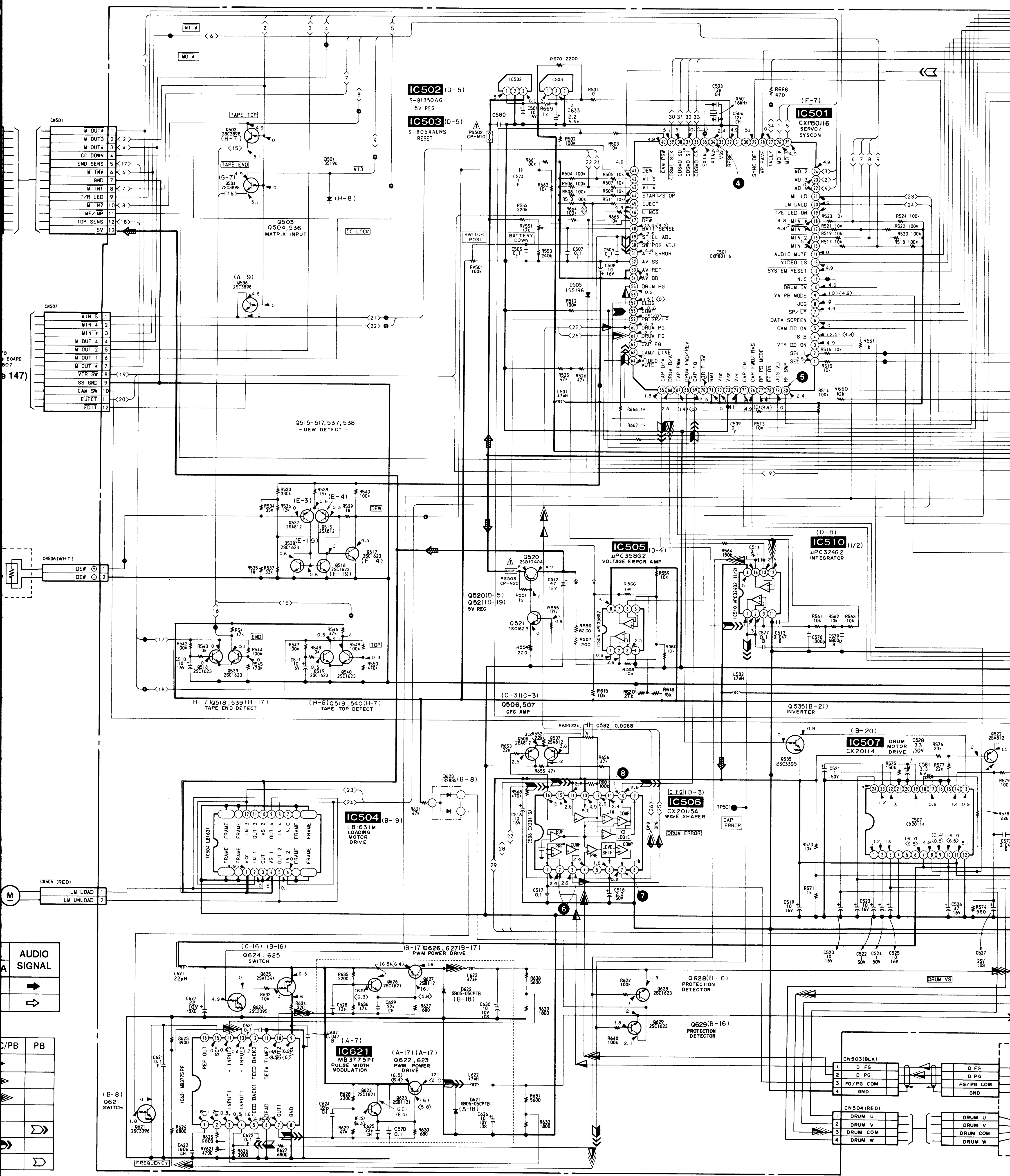

M
N
O
IC507 CX20114
11
12
14
7
10
15
17
9
5
PULSE WIDTH MODULATION
OSC
CW/CCW
IB CONTROL
POWER OFF
8
CL DET
BRAKE
MIX VI
START
U V W
22
24
3
19
21
2
20
1
23
16
4
6

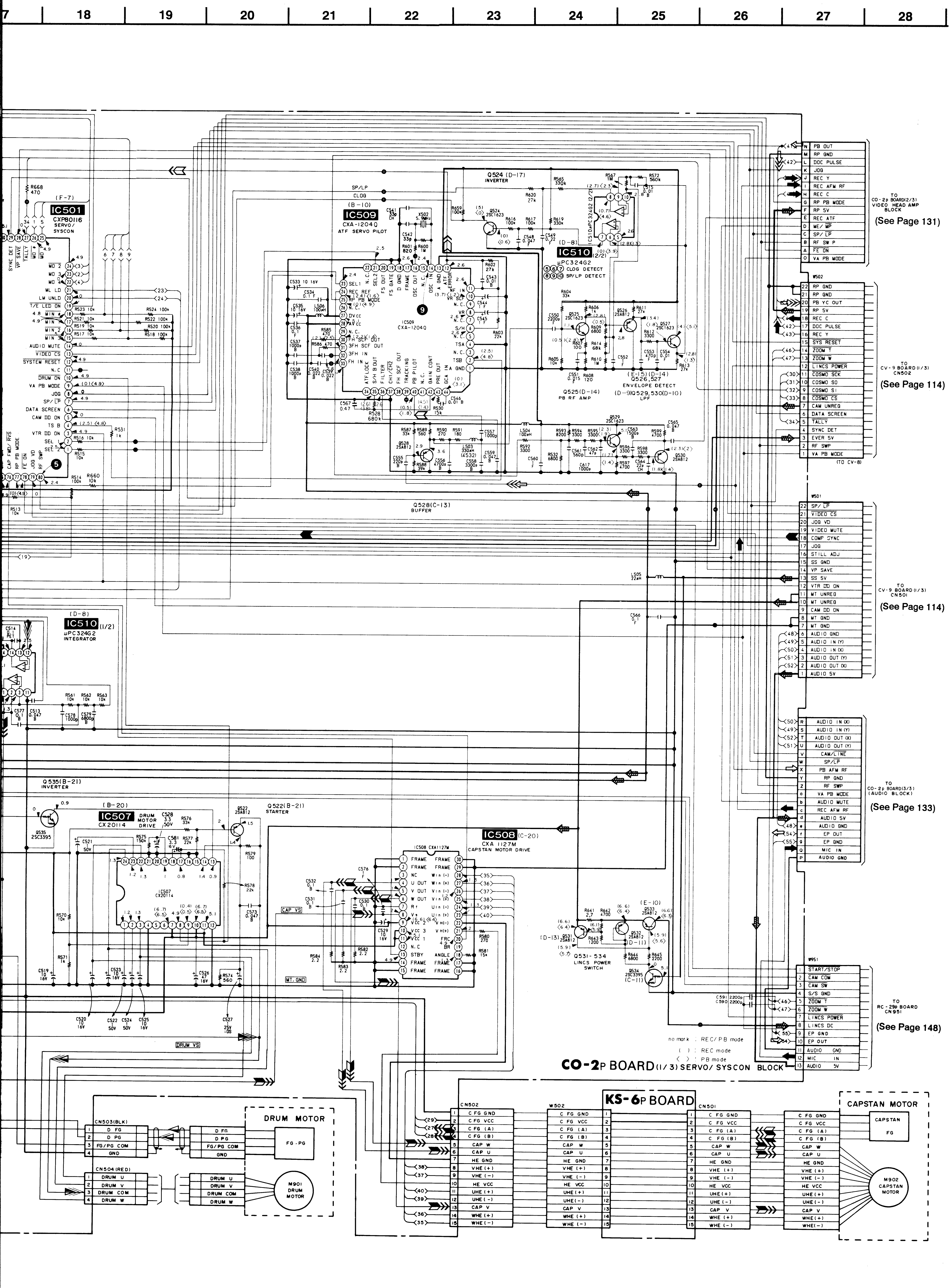
• SIGNAL PATH

	VIDEO SIGNAL			AUDIO SIGNAL
	CHROMA	Y	Y/CHROMA/DATA	
REC	➡		➡⋙	➡
PB			⇨⋙	⇨

• Signal path

	REC	REC/PB	PB
Drum speed servo		▻	
Drum phase servo		⊳⊳	
Drum servo (speed and phase)		⊳⊳⊳	
Capstan speed servo			
Capstan phase servo			⊃⟫
Capstan servo (speed and phase)		➤⟫	
Ref. signal	➤		⊃

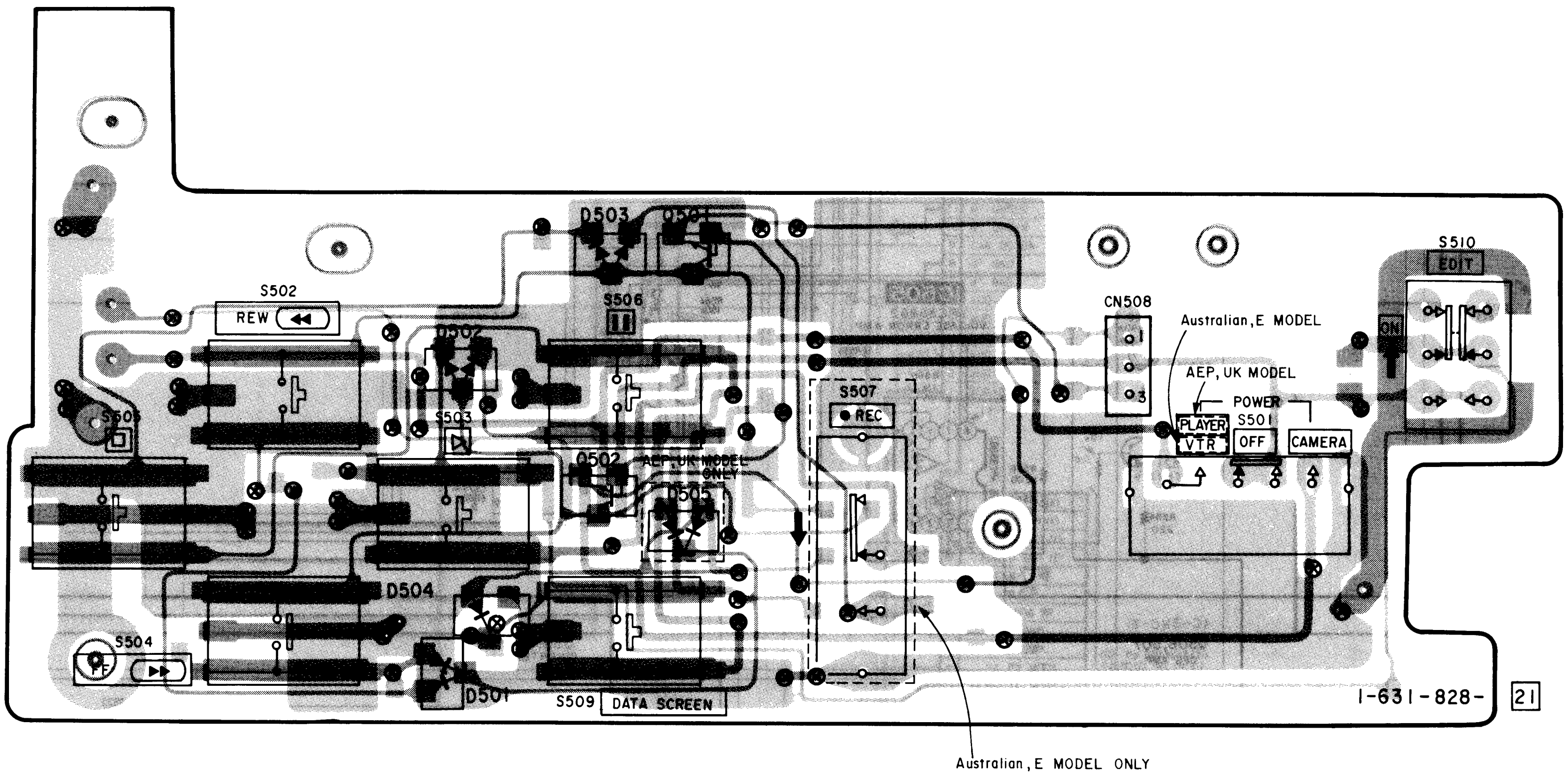

CN501
M OUT#
M OUT3
M OUT4
CC DOWN
END SENS
M IN#
GND
M IN1
T/R LED
M IN2
ME/MP
TOP SENS
5V
TAPE TOP
Q503 2SC3898 (H-7)
TAPE END
Q504 2SC3898 (G-7)
D504 1SS196
M13
Q503 Q504,536 MATRIX INPUT
CC LOCK
(A-9) Q536 2SC3898
CN507
MIN 5
MIN 4
MIN #
M OUT 4
M OUT 2
M OUT 1
M OUT #
VTR SW
SS GND
CAM SW
EJECT
EDIT
Q515-517,537,538 - DEW DETECT -
DEW
CN506 (WHT)
DEW ⊕
DEW ⊖
END
TOP
(H-17) Q518,539 (H-17) TAPE END DETECT
(H-6) Q519,540 (H-7) TAPE TOP DETECT
IC502 (D-5) S-81350AG 5V REG
IC503 (D-5) S-8054ALRS RESET
PS502 ICP-N10
SWITCH POSI
BATTERY DOWN
IC501 CXP80116 SERVO/SYSCON
X501 16MHz
D505 1SS196
IC505 (D-4) μPC358G2 VOLTAGE ERROR AMP
Q520 (D-5) Q521 (D-19) 5V REG
PS503 ICP-N20
IC510 (D-8) (1/2) μPC324G2 INTEGRATOR
(C-3)(C-3) Q506,507 CFG AMP
Q535 (B-21) INVERTER
IC507 (B-20) CX20114 DRUM MOTOR DRIVE
IC504 (B-19) LB1631M LOADING MOTOR DRIVE
D623 1SS355 (B-8)
IC506 (D-3) CX20115A WAVE SHAPER
C FG
DRUM ERROR
TP501
CAP ERROR
CN505 (RED)
LM LOAD
LM UNLOAD
AUDIO SIGNAL
C/PB
PB
(C-16) (B-16) Q624,625 SWITCH
(B-17) Q626,627 (B-17) PWM POWER DRIVE
IC621 MB3775PF PULSE WIDTH MODULATION
(A-17) (A-17) Q622,623 PWM POWER DRIVE
(B-8) Q621 SWITCH
FREQUENCY
Q628 (B-16) PROTECTION DETECTOR
Q629 (B-16) PROTECTION DETECTOR
DRUM VS
CN503 (BLK)
D FG
D PG
FG/PG COM
GND
CN504 (RED)
DRUM U
DRUM V
DRUM COM
DRUM W


17
18
19
20
21
22
23
24
25
26
27
28
IC501 (F-7) CXP80116 SERVO/SYSCON
IC509 (B-10) CXA-1204Q ATF SERVO PILOT
Q524 (D-17) INVERTER
IC510 (D-8) μPC324G2 (2/2)
⑤⑥⑦ CLOG DETECT
⑧⑨⑩ SP/LP DETECT
Q525 (D-14) PB RF AMP
(E-15)(D-14) Q526,527 ENVELOPE DETECT
(D-9) Q529,530 (D-10) LPF
Q528 (C-13) BUFFER
IC510 (D-8) (1/2) μPC324G2 INTEGRATOR
Q535 (B-21) INVERTER
IC507 (B-20) CX20114 DRUM MOTOR DRIVE
Q522 (B-21) STARTER
IC508 (C-20) CXA 1127M CAPSTAN MOTOR DRIVE
Q531-534 LINCS POWER SWITCH
TO CO-2p BOARD (2/3) VIDEO HEAD AMP BLOCK
(See Page 131)
TO CV-9 BOARD (1/3) CN502
(See Page 114)
TO CV-9 BOARD (1/3) CN501
(See Page 114)
TO CO-2p BOARD (3/3) (AUDIO BLOCK)
(See Page 133)
TO RC-29p BOARD CN951
(See Page 148)
(TO CV-8)
no mark : REC/PB mode
( ) : REC mode
〈 〉 : PB mode
CO-2P BOARD (1/3) SERVO/ SYSCON BLOCK
KS-6P BOARD
DRUM MOTOR
FG-PG
M901 DRUM MOTOR
CAPSTAN MOTOR
CAPSTAN FG
M902 CAPSTAN MOTOR
CN503 (BLK)
CN504 (RED)
CN502
W502
CN501
W501
W951
CAP VS
MT. GND
DRUM VS

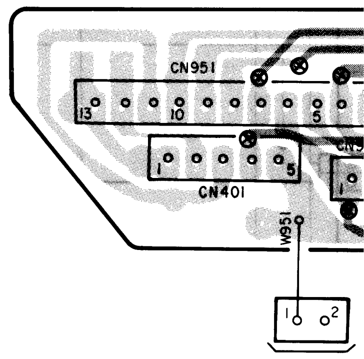
MA-37P (MIC AMP), RC-29P (START/STOP SWITCH), VK-3P (VIDEO FUNCTION SWITCH) PRINTED WIRING BOARDS

— Ref. No. MA-37P, VK-3P BOARDS: 9000 series, RC-29P BOARD: 10000 series —

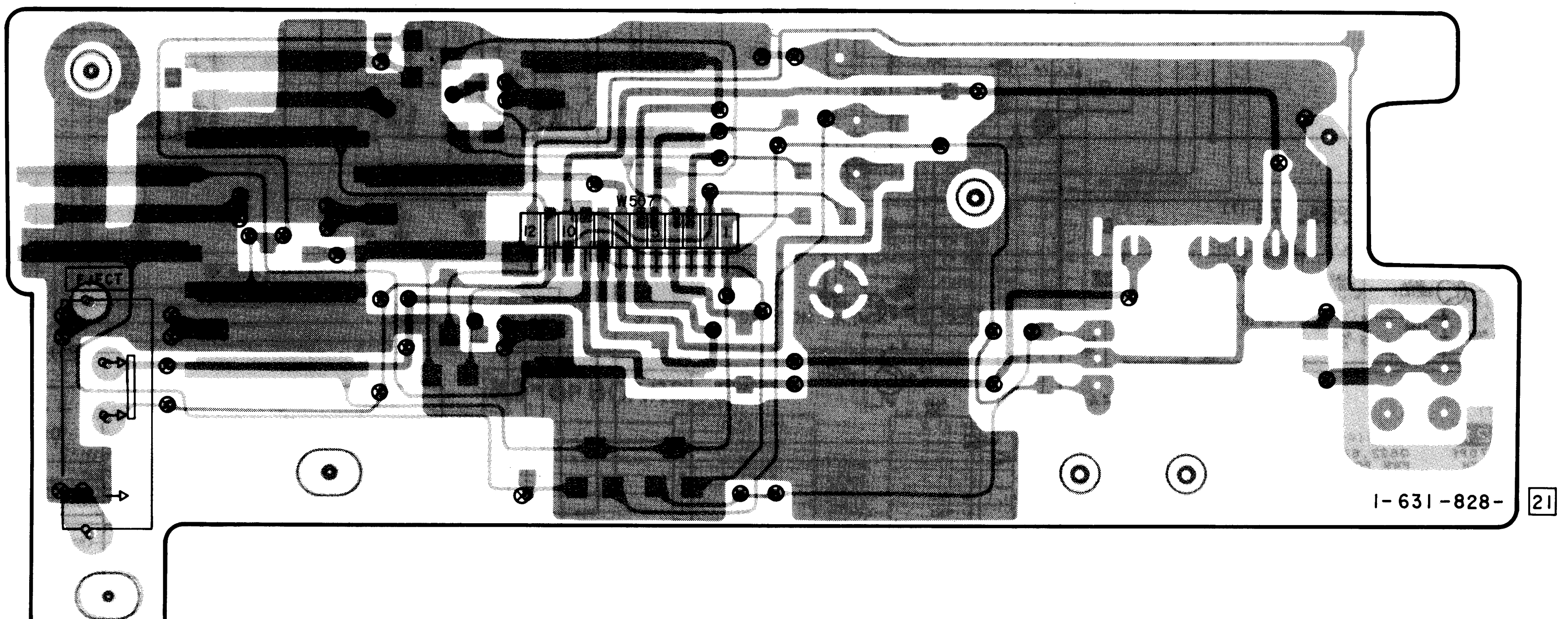
VK-3P BOARD (COMPONENT SIDE)


S502
REW
D503
D504
S506
D502
S503
S505
D502
AEP, UK MODEL ONLY
D505
D504
S504
FF
D501
S509
DATA SCREEN
S507
● REC
CN508
1
2
3
Australian, E MODEL
AEP, UK MODEL
POWER
S501
PLAYER
VTR
OFF
CAMERA
S510
EDIT
ON
1-631-828-
21
Australian, E MODEL ONLY

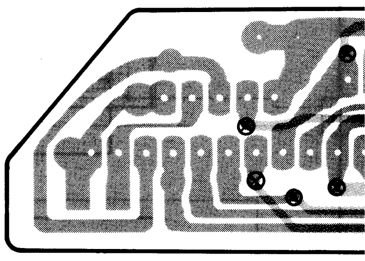
RC-29P BOARD (COMPONEN

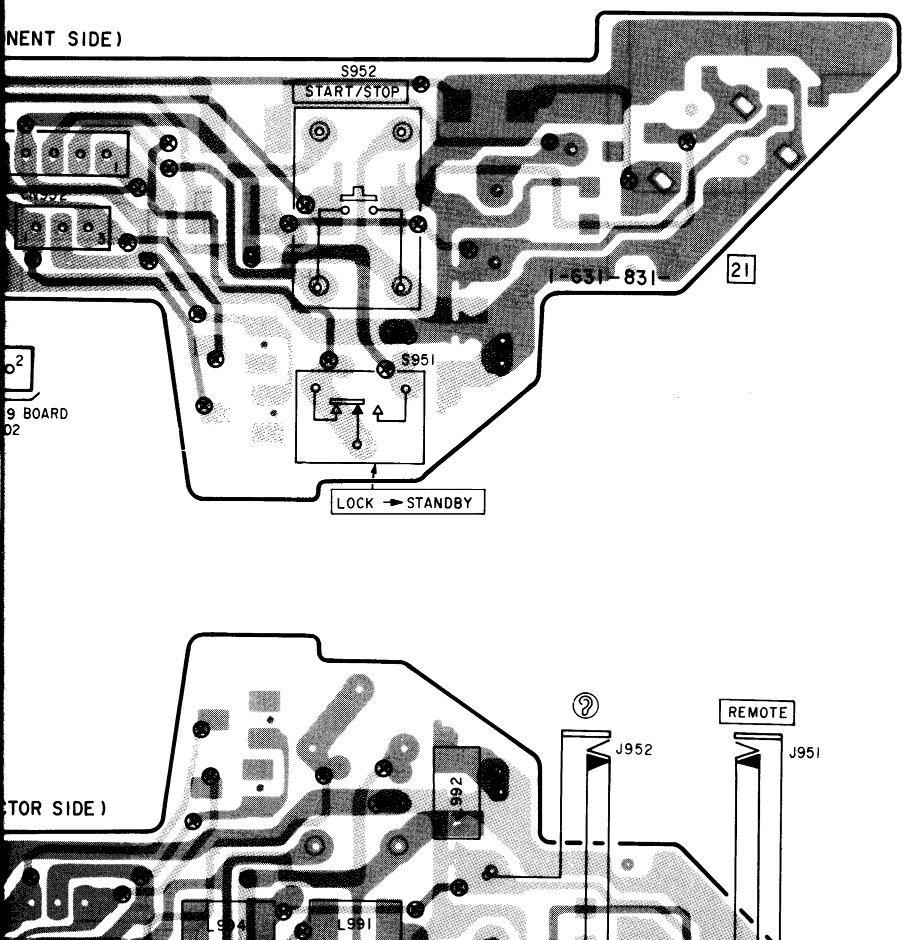

CN951
13
10
5
CN401
1
5
W951
1
2
TO CV-9 BOA
CN902

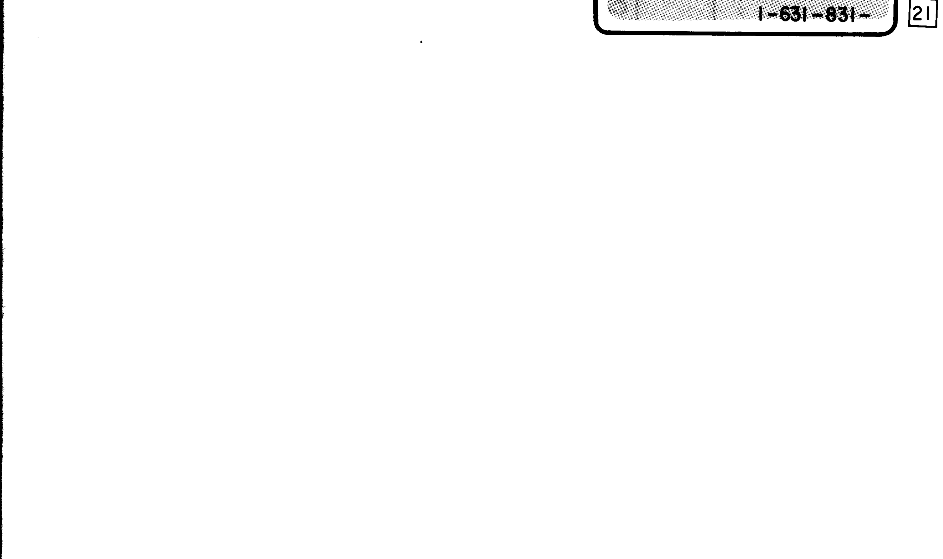
VK-3P BOARD (CONDUCTOR SIDE)


EJECT
W507
1-631-828-
21

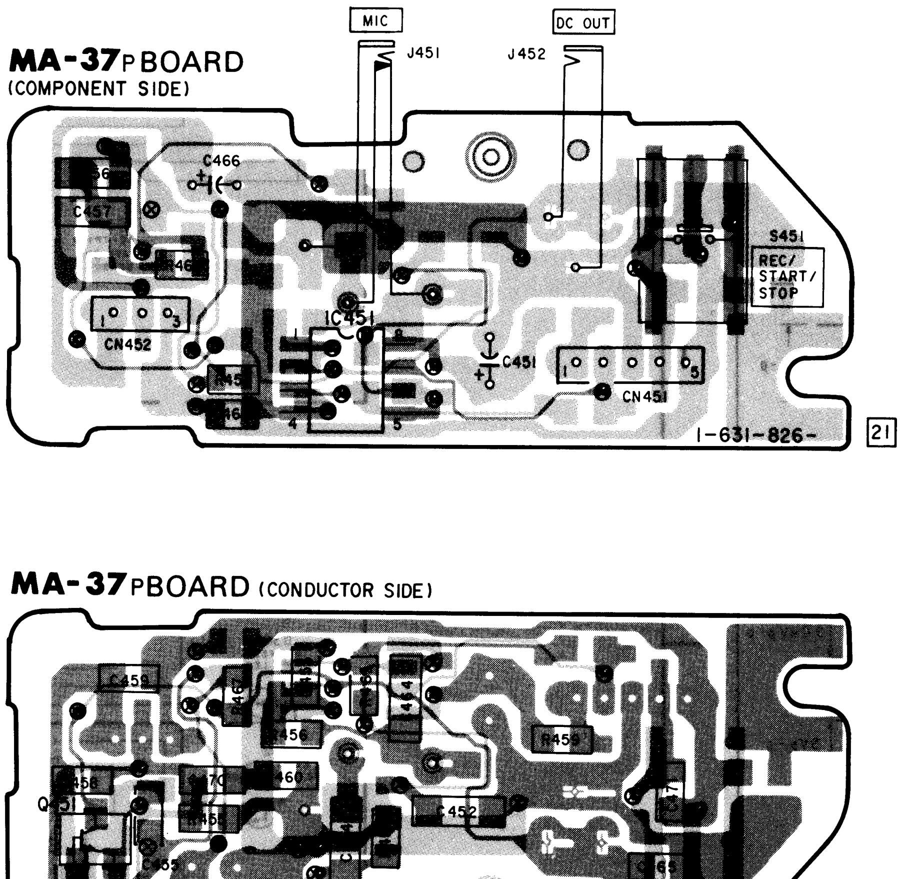
RC-29P BOARD (CONDUCTOR



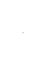

NENT SIDE)
S952
START/STOP
1-631-831-
21
S951
9 BOARD
D2
LOCK → STANDBY


TOR SIDE)
⑦
REMOTE
J952
J951
L992
L994
L991
L993
L995
1-631-831-
21

MA-37P BOARD
(COMPONENT SIDE)

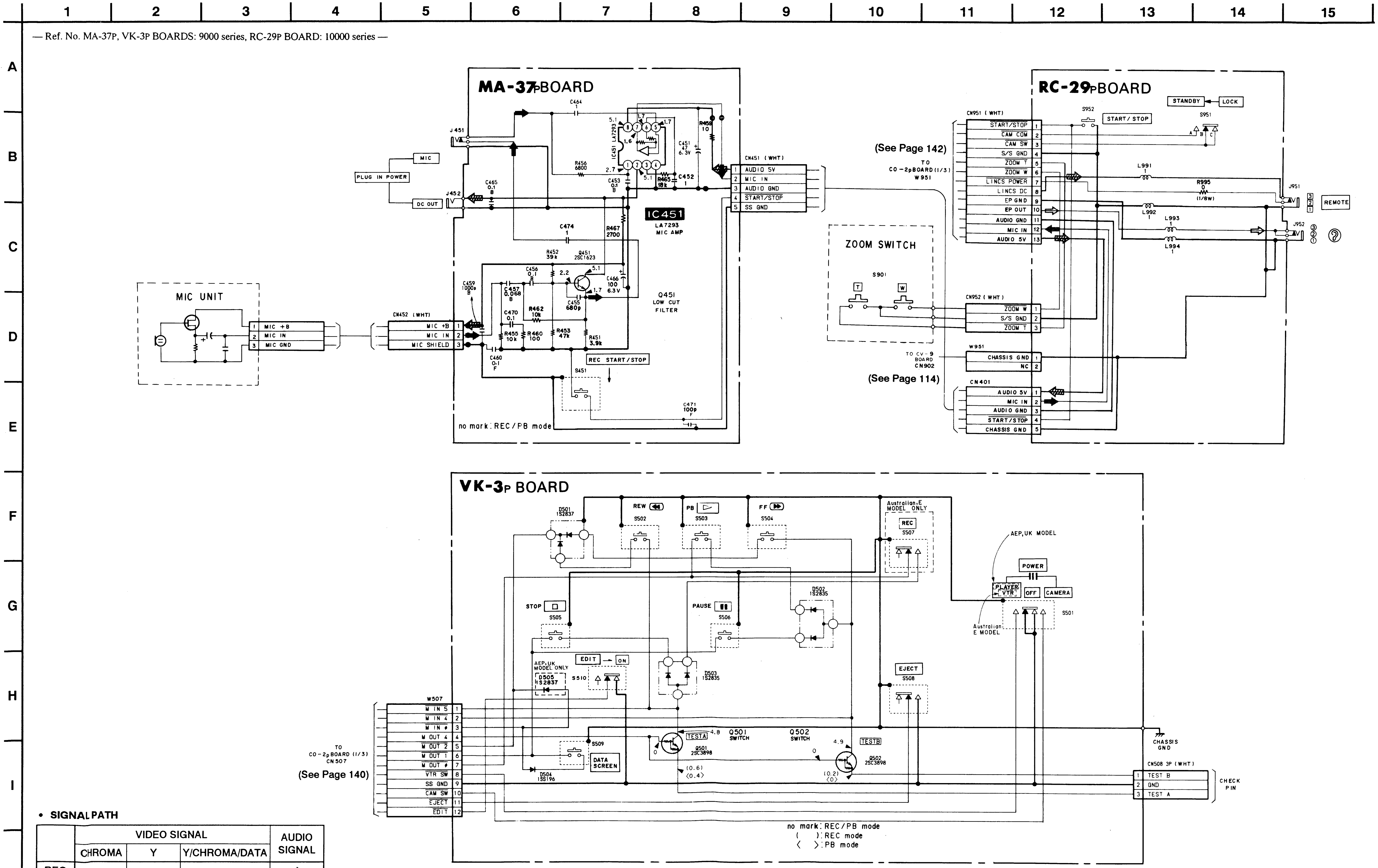

MIC
J451
DC OUT
J452
C466
C457
IC451
CN452
C451
CN451
S451
REC/
START/
STOP
1-631-826-
21

MA-37P BOARD (CONDUCTOR SIDE)


C459
C456
Q451
R460
C452
R459
1-631-826-
21

MA-37P (MIC AMP), RC-29P (START/STOP SWITCH), VK-3P (VIDEO FUNCTION SWITCH) SCHEMATIC DIAGRAMS

— Ref. No. MA-37P, VK-3P BOARDS: 9000 series, RC-29P BOARD: 10000 series —


1
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11
12
13
14
15
A
B
C
D
E
F
G
H
I
J
MA-37P BOARD
MIC UNIT
1 MIC +B
2 MIC IN
3 MIC GND
CN452 (WHT)
MIC +B 1
MIC IN 2
MIC SHIELD 3
J451
J452
MIC
PLUG IN POWER
DC OUT
C464 1
C465 0.1 B
IC451 LA7293
IC451 LA7293 MIC AMP
R456 6800
C453 0.1 B
R465 18k
C452 1
C451 47 6.3V
R459 10
C474 1
R467 2700
R452 39k
Q451 2SC1623
Q451 LOW CUT FILTER
C456 0.1 B
C457 0.068 B
C459 1000p B
C466 100 6.3V
C455 680p
C470 0.1
R462 10k
R455 10k
R460 100
R453 47k
R451 3.9k
C460 0.1 F
REC START/STOP
S451
C471 100p F
no mark: REC/PB mode
CN451 (WHT)
1 AUDIO 5V
2 MIC IN
3 AUDIO GND
4 START/STOP
5 SS GND
RC-29P BOARD
(See Page 142)
TO CO-2P BOARD (1/3) W951
CN951 (WHT)
START/STOP 1
CAM COM 2
CAM SW 3
S/S GND 4
ZOOM T 5
ZOOM W 6
LINCS POWER 7
LINCS DC 8
EP GND 9
EP OUT 10
AUDIO GND 11
MIC IN 12
AUDIO 5V 13
S952
START/STOP
STANDBY
LOCK
S951
L991 1
R995 0 (1/8W)
L992 1
L993 1
L994 1
J951
J952
REMOTE
ZOOM SWITCH
S901
T
W
CN952 (WHT)
ZOOM W 1
S/S GND 2
ZOOM T 3
W951
CHASSIS GND 1
NC 2
TO CV-9 BOARD CN902
(See Page 114)
CN401
AUDIO 5V 1
MIC IN 2
AUDIO GND 3
START/STOP 4
CHASSIS GND 5
VK-3P BOARD
D501 1S2837
REW
S502
PB
S503
FF
S504
Australian, E MODEL ONLY
REC
S507
AEP, UK MODEL
POWER
PLAYER VTR
OFF
CAMERA
S501
Australian, E MODEL
STOP
S505
PAUSE
S506
D502 1S2835
AEP, UK MODEL ONLY
D505 1S2837
EDIT
ON
S510
D503 1S2835
EJECT
S508
W507
M IN 5 1
M IN 4 2
M IN 6 3
M OUT 4 4
M OUT 2 5
M OUT 1 6
M OUT 0 7
VTR SW 8
SS GND 9
CAM SW 10
EJECT 11
EDIT 12
TO CO-2P BOARD (1/3) CN507
(See Page 140)
S509
DATA SCREEN
D504 1SS196
TESTA
Q501 SWITCH
Q501 2SC3898
Q502 SWITCH
TESTB
Q502 2SC3898
CHASSIS GND
CN508 3P (WHT)
1 TEST B
2 GND
3 TEST A
CHECK PIN
no mark: REC/PB mode
( ): REC mode
〈 〉: PB mode

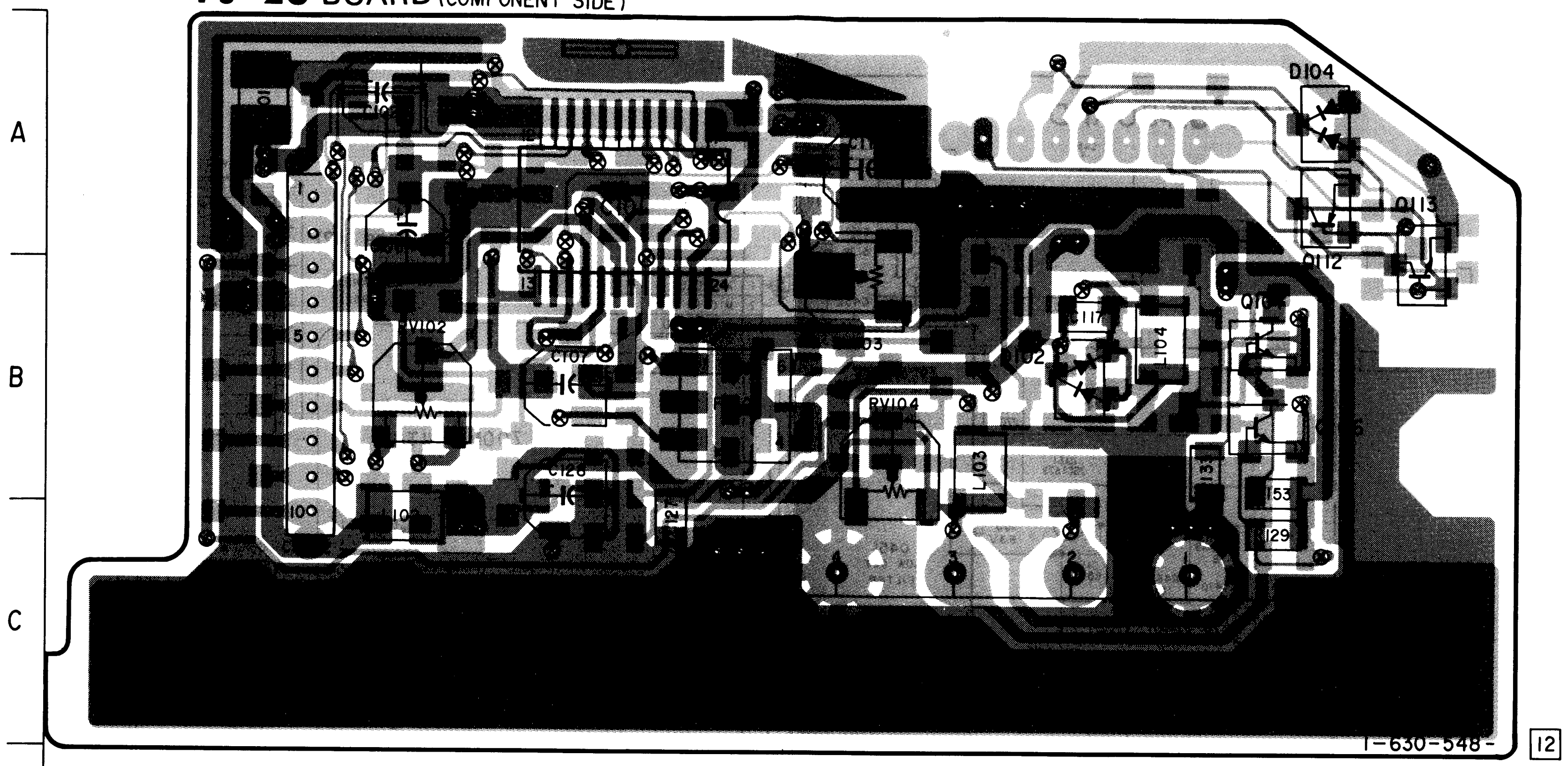
- **SIGNAL PATH**

	VIDEO SIGNAL			AUDIO SIGNAL
	CHROMA	Y	Y/CHROMA/DATA	
REC				➡
PB				⇨

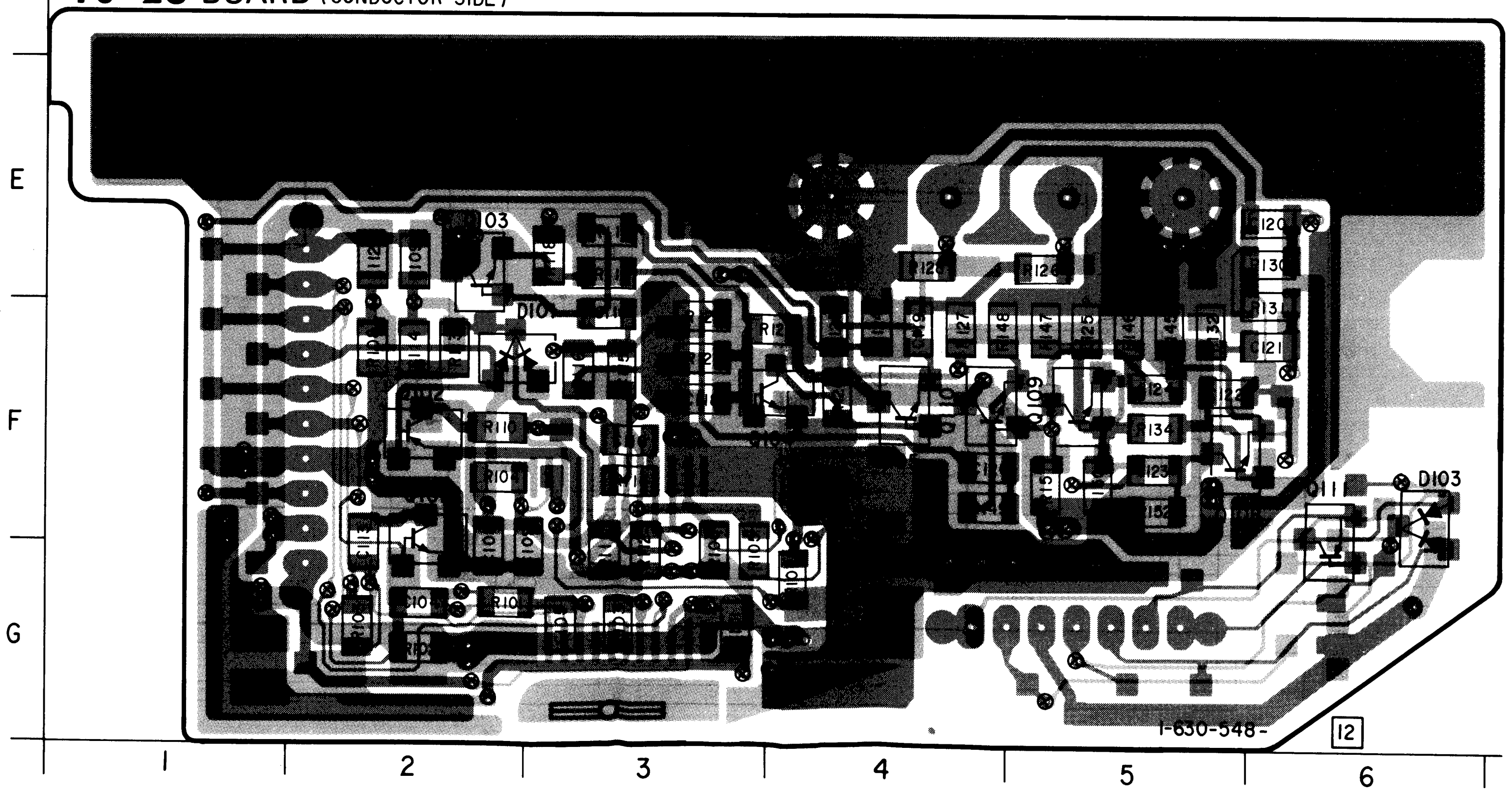
PJ-20 (JOG CHROMA PROCESS) PRINTED WIRING BOARD

— Ref. No. PJ-20 BOARD: 4000 series —

PJ-20 BOARD (COMPONENT SIDE)

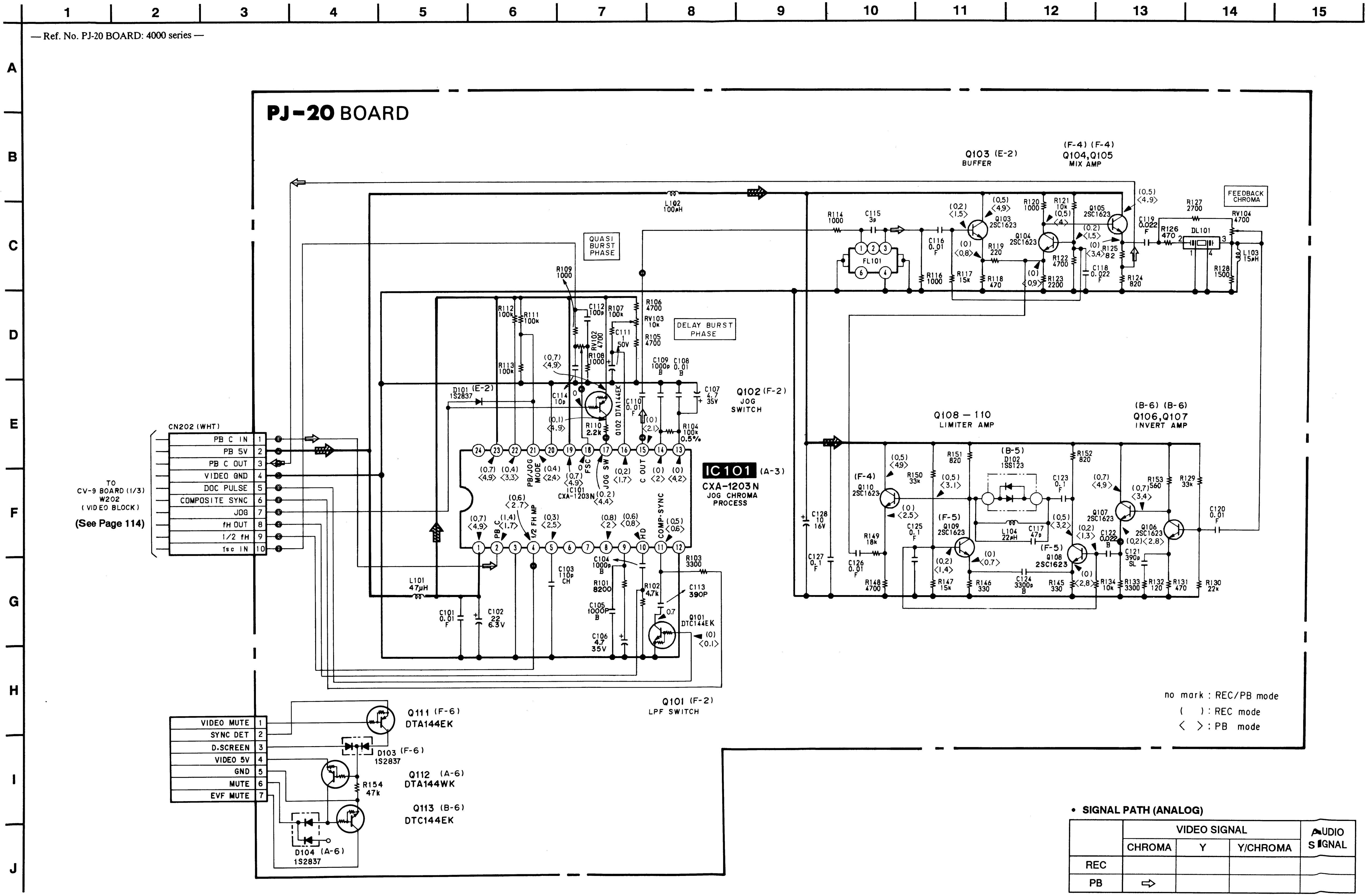

A
B
C
D
D104
Q113
Q112
RV102
C107
C128
RV104
L103
L104
1-630-548-
12

PJ-20 BOARD (CONDUCTOR SIDE)


E
F
G
1
2
3
4
5
6
D103
D101
D103
1-630-548-
12

PJ-20 (JOG CHROMA PROCESS) SCHEMATIC DIAGRAM

— Ref. No. PJ-20 BOARD: 4000 series —


1
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10
11
12
13
14
15
A
B
C
D
E
F
G
H
I
J
PJ-20 BOARD
CN202 (WHT)
PB C IN 1
PB 5V 2
PB C OUT 3
VIDEO GND 4
DOC PULSE 5
COMPOSITE SYNC 6
JOG 7
fH OUT 8
1/2 fH 9
fsc IN 10
TO CV-9 BOARD (1/3) W202 (VIDEO BLOCK)
(See Page 114)
L102 100µH
QUASI BURST PHASE
DELAY BURST PHASE
R109 1000
R112 100k
R111 100k
R113 100k
C112 100p
R107 100k
RV102 4700
R108 1000
C111 1 50V
R106 4700
RV103 10k
R105 4700
C109 1000p B
C108 0.01 B
C107 4.7 35V
D101 (E-2) 1S2837
C114 10p
Q102 DTA144EK
C110 0.01 F
R110 2.2k
R104 100k 0.5%
Q102 (F-2) JOG SWITCH
IC101 (A-3)
CXA-1203N JOG CHROMA PROCESS
IC101 CXA-1203N
PB/JOG MODE
FSC
JOG SW
C OUT
PB C
1/2 FH MP
HD
COMP-SYNC
L101 47µH
C101 0.01 F
C102 22 6.3V
C103 110p CH
C104 1000p B
R101 8200
C105 1000P B
C106 4.7 35V
R102 4.7k
C113 390P
R103 3300
Q101 DTC144EK
Q101 (F-2) LPF SWITCH
Q103 (E-2) BUFFER
(F-4) (F-4) Q104,Q105 MIX AMP
R114 1000
C115 3p
FL101
C116 0.01 F
R116 1000
R117 15k
Q103 2SC1623
R119 220
R118 470
Q104 2SC1623
R120 1000
R121 10k
R122 4700
R123 2200
Q105 2SC1623
R125 82
C118 0.022 F
R124 820
C119 0.022 F
R126 470
R127 2700
DL101
FEEDBACK CHROMA
RV104 4700
L103 15µH
R128 1500
Q108 — 110 LIMITER AMP
(B-6) (B-6) Q106,Q107 INVERT AMP
C128 10 16V
C127 0.1 F
(F-4) Q110 2SC1623
C126 0.01 F
R149 18k
R148 4700
R150 33k
R151 820
(F-5) Q109 2SC1623
C125 0.1 F
R147 15k
R146 330
(B-5) D102 1SS123
L104 22µH
C117 47p
C123 0.1 F
C124 3300p B
(F-5) Q108 2SC1623
R145 330
R152 820
Q107 2SC1623
C122 0.022 B
C121 390p SL
R134 10k
R133 3300
R153 560
R129 33k
Q106 2SC1623
R132 120
R131 470
R130 22k
C120 0.01 F
VIDEO MUTE 1
SYNC DET 2
D.SCREEN 3
VIDEO 5V 4
GND 5
MUTE 6
EVF MUTE 7
Q111 (F-6) DTA144EK
D103 (F-6) 1S2837
Q112 (A-6) DTA144WK
R154 47k
Q113 (B-6) DTC144EK
D104 (A-6) 1S2837

no mark : REC/PB mode
( ) : REC mode
< > : PB mode

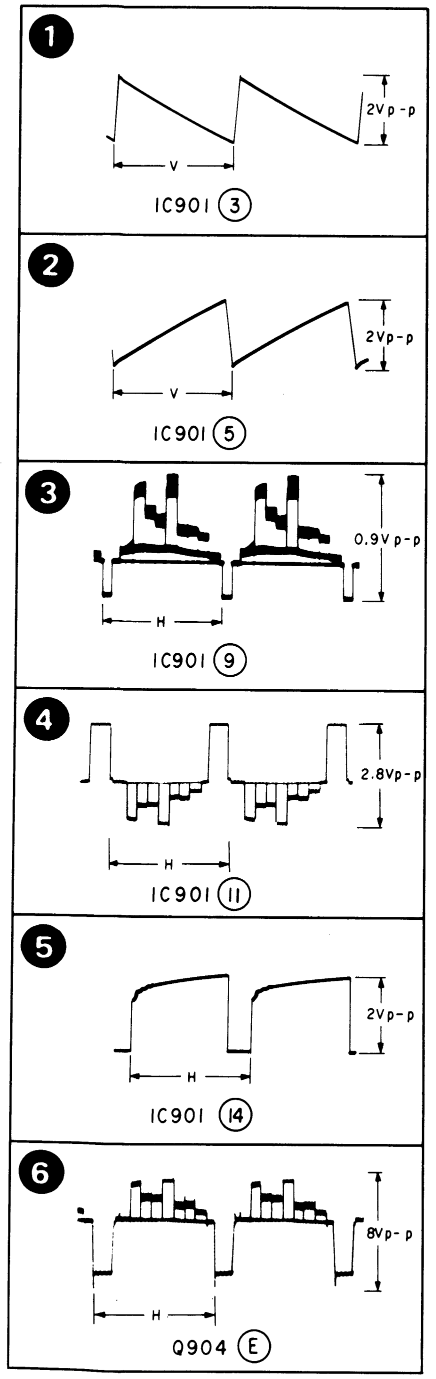
• **SIGNAL PATH (ANALOG)**

	VIDEO SIGNAL			AUDIO SIGNAL
	CHROMA	Y	Y/CHROMA	
REC				
PB	⇨			

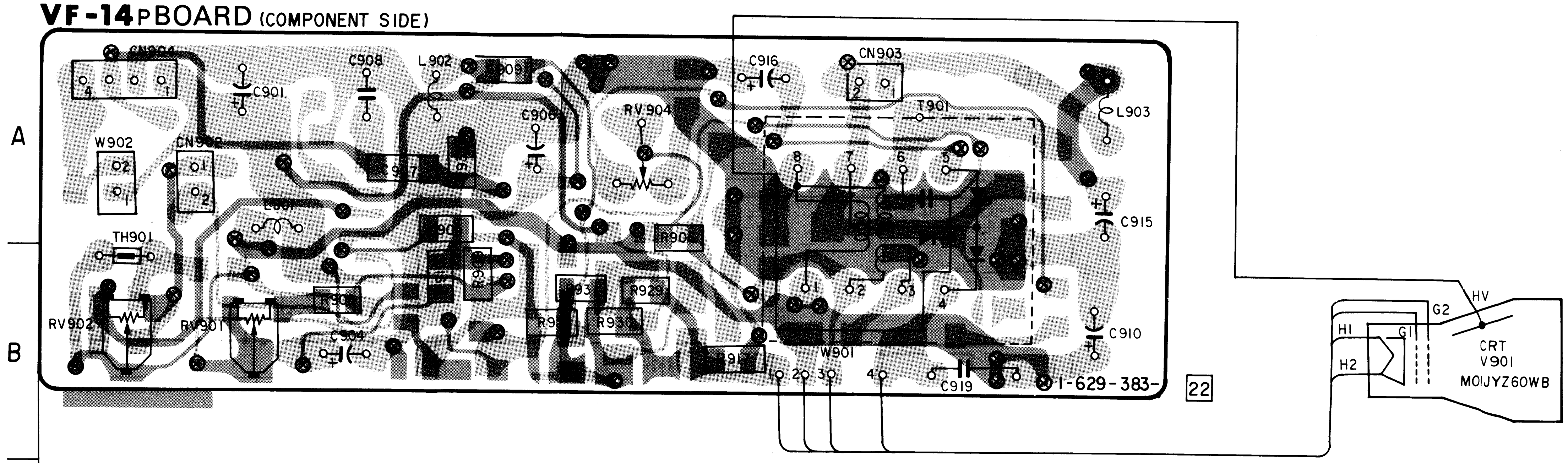
VF-14P (ELECTRONIC VIEW FIDER), LD-13P (TALLY LED) PRINTED WIRING BOARDS

— Ref. No. VF-14P BOARD: 7000 series, LD-13P BOARD: 8000 series —

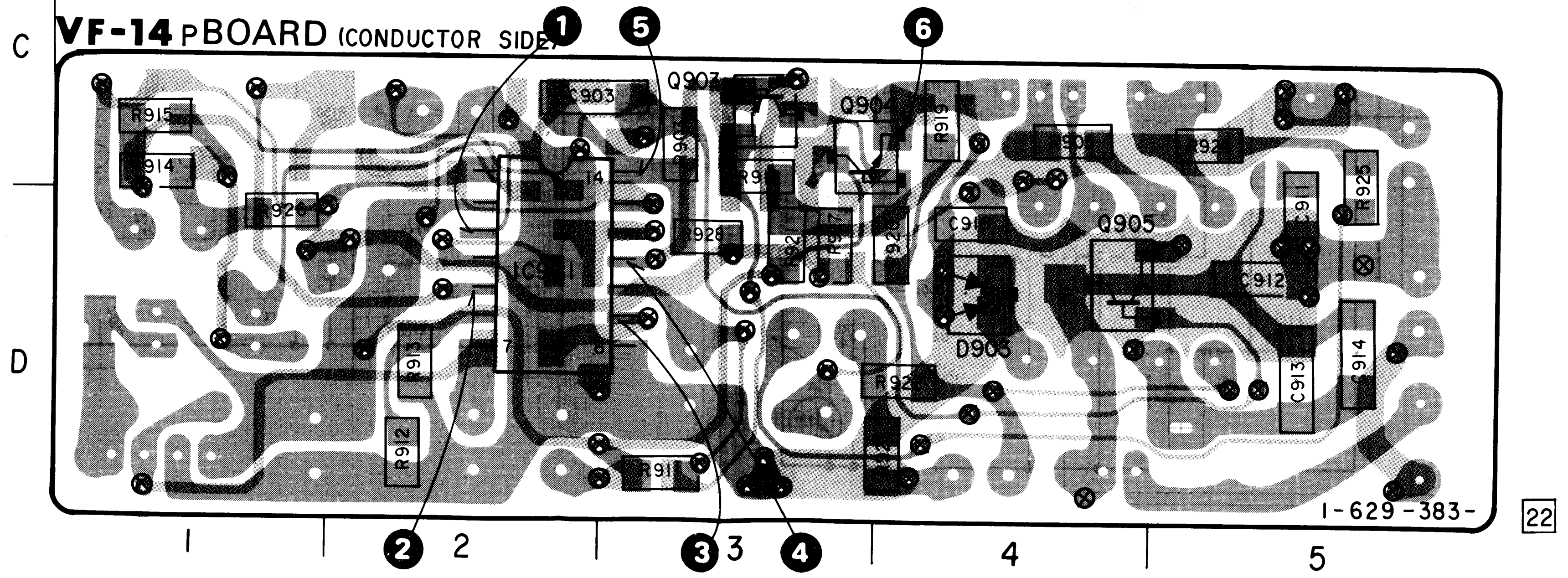
VF-14P BOARD



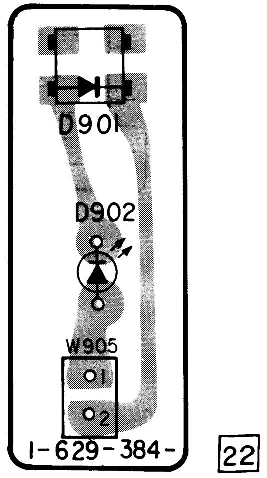
VF-14P BOARD (COMPONENT SIDE)


A
B
CN904
C901
C908
L902
R909
C906
RV904
C916
CN903
T901
L903
W902
CN902
C907
L901
TH901
R90
R929
R930
C915
RV902
RV901
C904
C910
W901
C919
1-629-383-
22
HV
G2
H1
G1
H2
CRT
V901
M01JYZ60WB

VF-14P BOARD (CONDUCTOR SIDE)

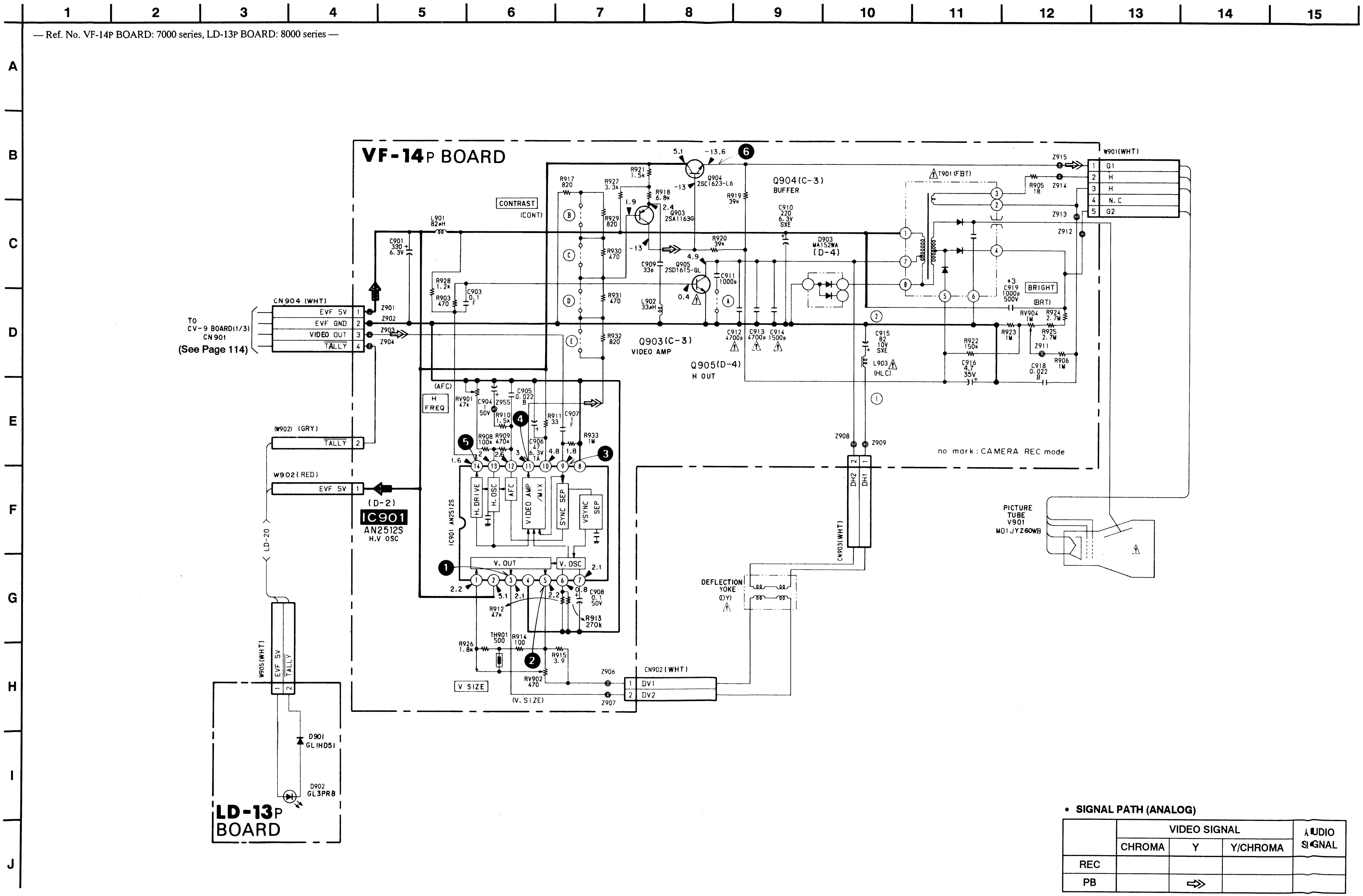

C
D
❶
❺
❻
R915
R914
R926
C903
Q903
Q904
R919
R925
IC901
R928
Q905
C912
C913
C914
D903
R913
R912
R911
R924
1-629-383-
22
❷
❸
❹
1
2
3
4
5

LD-13P BOARD


D901
D902
W905
1-629-384-
22

VF-14P (ELECTRONIC VIEW FIDER), LD-13P (TALLY LED) SCHEMATIC DIAGRAMS

— Ref. No. VF-14P BOARD: 7000 series, LD-13P BOARD: 8000 series —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14
15
A
B
C
D
E
F
G
H
I
J
VF-14P BOARD
LD-13P BOARD
TO CV-9 BOARD(1/3) CN901
(See Page 114)
CN904 (WHT)
EVF 5V
EVF GND
VIDEO OUT
TALLY
Z901
Z902
Z903
Z904
(W902) (GRY)
TALLY
W902 (RED)
EVF 5V
LD-20
W905 (WHT)
EVF 5V
TALLY
D901 GL1HD51
D902 GL3PR8
(D-2)
IC901
AN2512S
H.V OSC
IC901 AN2512S
H.DRIVE
H.OSC
AFC
VIDEO AMP /MIX
SYNC SEP
VSYNC SEP
V.OUT
V.OSC
H FREQ
(AFC)
CONTRAST
(CONT)
BRIGHT
(BRT)
V SIZE
(V.SIZE)
L901 82μH
C901 330 6.3V
R928 1.2k
R903 470
C903 0.1 F
RV901 47k
C904 1 50V
Z955
C905 0.022 B
R910 1.5k
R911 33
C907 1 F
C906 47 6.3V TA
R908 100k
R909 470k
R933 1M
R917 820
R927 3.3k
R921 1.5k
R918 6.8k
R929 820
R930 470
R931 470
R932 820
R919 39k
R920 39k
Q903 2SA1163G
Q903(C-3) VIDEO AMP
Q904 2SC1623-L6
Q904(C-3) BUFFER
Q905 2SD1615-GL
Q905(D-4) H OUT
C909 33p
C911 1000p
L902 33μH
C910 220 6.3V SXE
C912 4700p
C913 4700p
C914 1500p
D903 MA152WA (D-4)
T901 (FBT)
C915 82 10V SXE
L903 (HLC)
R922 150k
C916 4.7 35V
C919 1000p 500V
*3
RV904 1M
R923 1M
R924 2.7M
R925 2.7M
R906 1M
C918 0.022 B
R905 18
Z911
Z912
Z913
Z914
Z915
W901 (WHT)
G1
H
H
N.C
G2
Z908
Z909
CN903 (WHT)
DH2
DH1
PICTURE TUBE V901 M01JYZ60WB
DEFLECTION YOKE (DY)
R912 47k
R926 1.8k
TH901 500
R914 100
R915 3.9
RV902 470
C908 0.1 50V
R913 270k
Z906
Z907
CN902 (WHT)
DV1
DV2
5.1
-13.6
-13
1.9
2.4
4.9
0.4
1.6
2.6
3
4.8
1.8
2.2
2.1
no mark : CAMERA REC mode

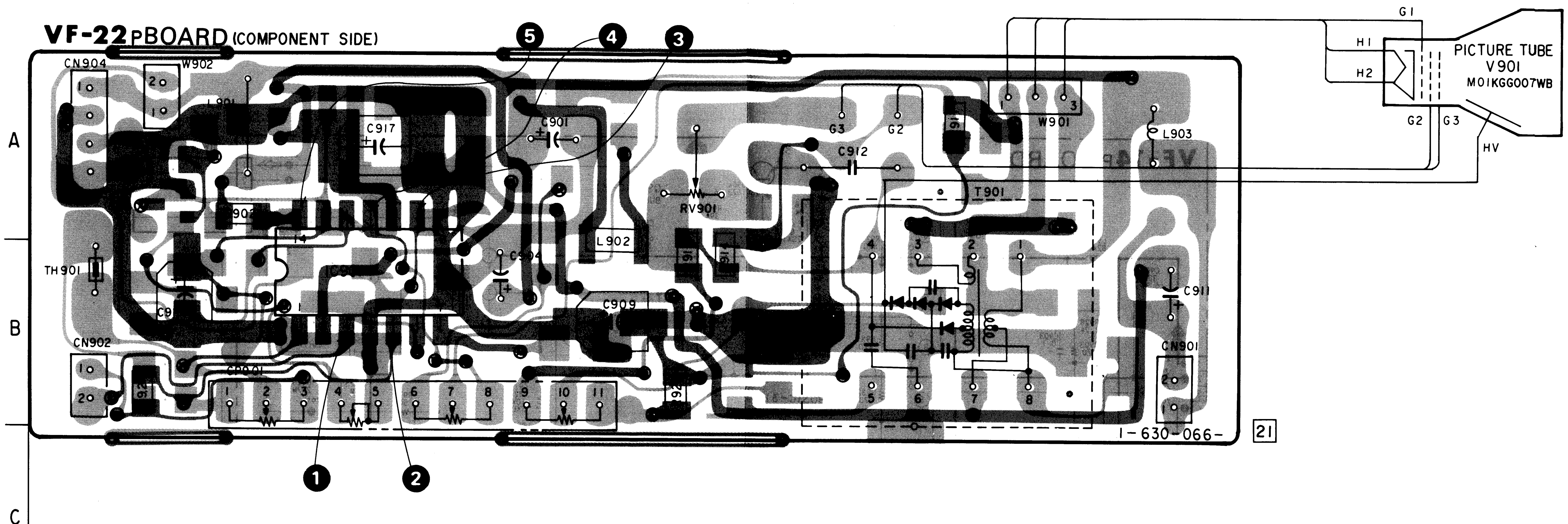
• **SIGNAL PATH (ANALOG)**

	VIDEO SIGNAL			AUDIO SIGNAL
	CHROMA	Y	Y/CHROMA	
REC				
PB		⇨		

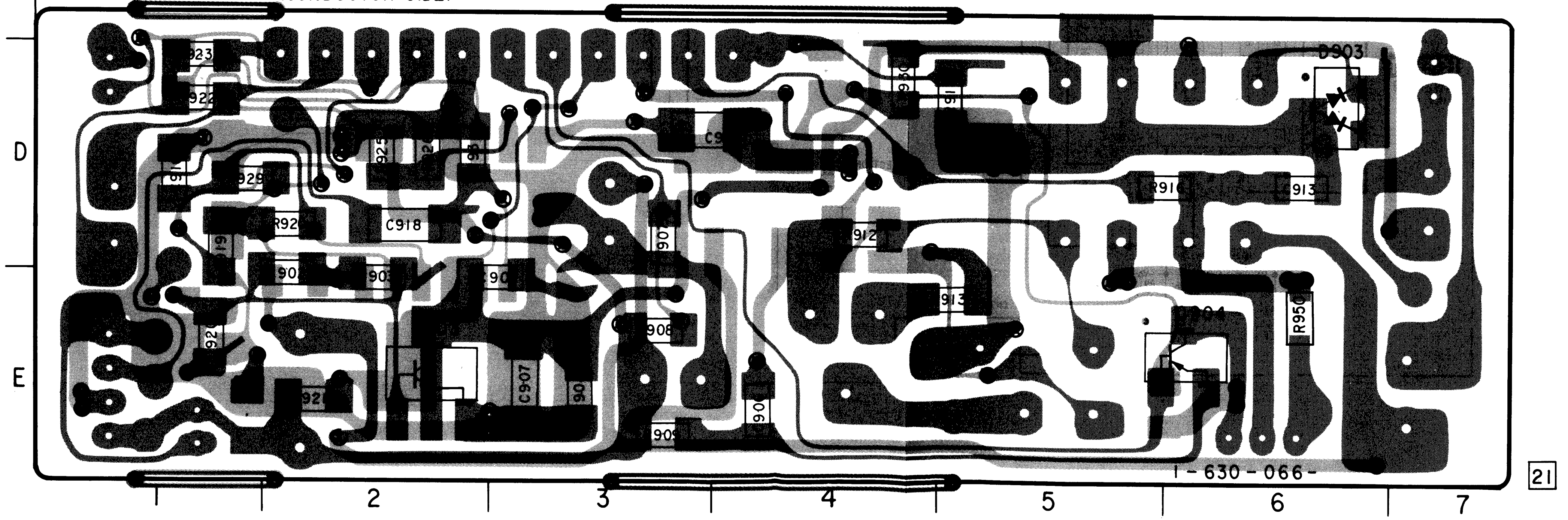
VF-22P (ELECTRONIC VIEW FIDER), LD-17P (TALLY LED) PRINTED WIRING BOARDS

— Ref. No. VF-22P BOARD: 4000 series, LD-17P BOARD: 5000 series —

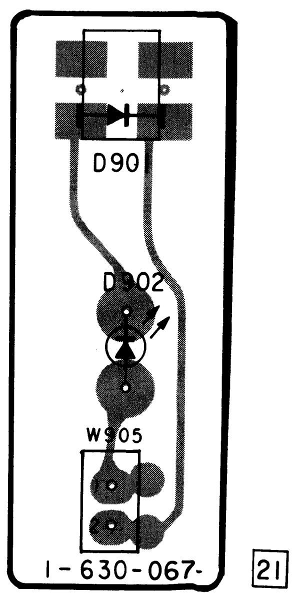
VF-22PBOARD (COMPONENT SIDE)


⑤
④
③
CN904
W902
L901
C917
C901
G3
G2
C912
W901
L903
T901
RV901
L902
C904
C909
C911
CN901
TH901
CN902
CP901
1-630-066-
21
①
②
A
B
C
G1
H1
H2
PICTURE TUBE
V901
M01KGG007WB
G2
G3
HV

VF-22PBOARD (CONDUCTOR SIDE)

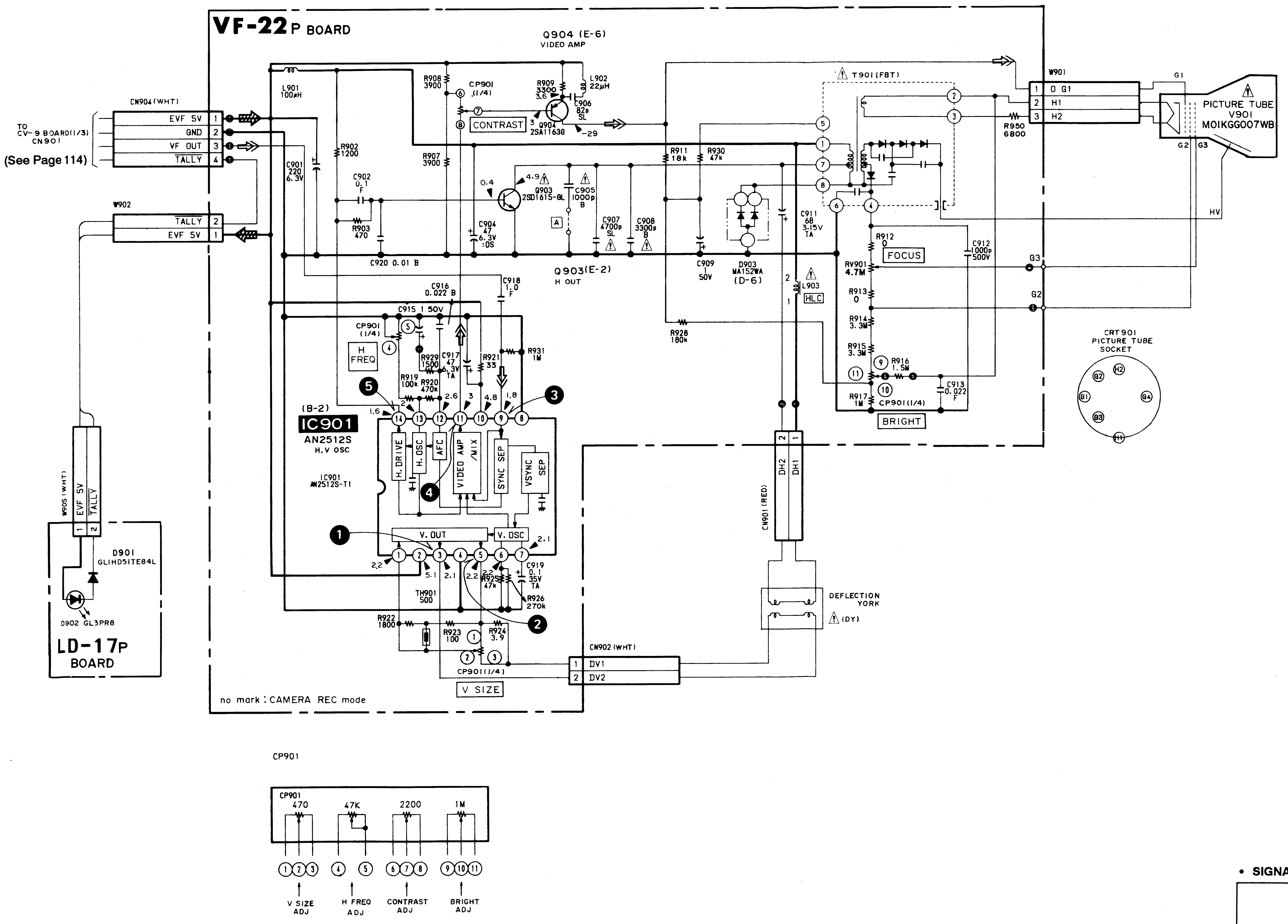

D903
R916
R913
C918
C907
R950
1-630-066-
21
D
E
2
3
4
5
6
7

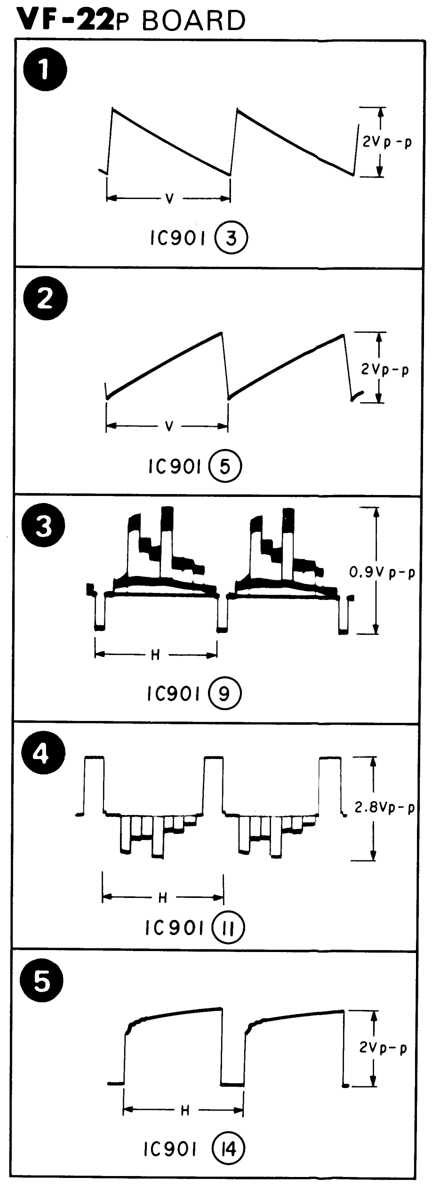
LD-17PBOARD


D901
D902
W905
1-630-067-
21

VF-22P (ELECTRONIC VIEW FIDER), LD-17P (TALLY LED) SCHEMATIC DIAGRAMS

— Ref. No. VF-22P BOARD: 4000 series, LD-17P BOARD: 5000 series —


VF-22P BOARD
Q904 (E-6) VIDEO AMP
TO CV-9 BOARD(1/3) CN901
(See Page 114)
CN904 (WHT)
EVF 5V
GND
VF OUT
TALLY
W902
L901 100μH
R908 3900
CP901 (1/4)
CONTRAST
R909 3300 3.6
L902 22μH
C906 82p SL
Q904 2SA1163B
-29
R902 1200
C901 220 6.3V
C902 0.1 F
R903 470
R907 3900
0.4
4.9
Q903 2SD1615-BL
C905 1000p B
C904 47 6.3V :OS
C907 4700p SL
C908 3300p B
C920 0.01 B
Q903 (E-2) H OUT
T901 (FBT)
R911 18k
R930 47k
C909 1 50V
D903 MA152WA (D-6)
C911 68 3.15V TA
L903 HLC
R928 180k
R950 6800
W901
0 G1
H1
H2
PICTURE TUBE V901 M01KGG007WB
G1 G2 G3 HV
R912 0
FOCUS
RV901 4.7M
C912 1000p 500V
R913 0
R914 3.3M
R915 3.3M
R916 1.5M
C913 0.022 F
R917 1M
CP901 (1/4)
BRIGHT
G3 G2
CRT901 PICTURE TUBE SOCKET
C918 1.0 F
C916 0.022 B
C915 1 50V
H FREQ
R929 1500
C917 47 6.3V TA
R921 33
R931 1M
R919 100k
R920 470k
(B-2) IC901 AN2512S H.V OSC
IC901 AN2512S-T1
H. DRIVE
H. OSC
AFC
VIDEO AMP /MIX
SYNC SEP
VSYNC SEP
V. OUT
V. OSC
1.6 2.6 3 4.8 1.8 2.2 5.1 2.1 2.2 2.1
C919 0.1 35V TA
R925 47k
R926 270k
TH901 500
R922 1800
R923 100
R924 3.9
CP901 (1/4)
V SIZE
CN902 (WHT)
DV1
DV2
CN901 (RED)
DH1
DH2
DEFLECTION YORK (DY)
W905 (WHT)
EVF 5V
TALLY
D901 GL1HD5ITE84L
D902 GL3PR8
LD-17P BOARD
no mark : CAMERA REC mode
CP901
470
47K
2200
1M
V SIZE ADJ
H FREQ ADJ
CONTRAST ADJ
BRIGHT ADJ



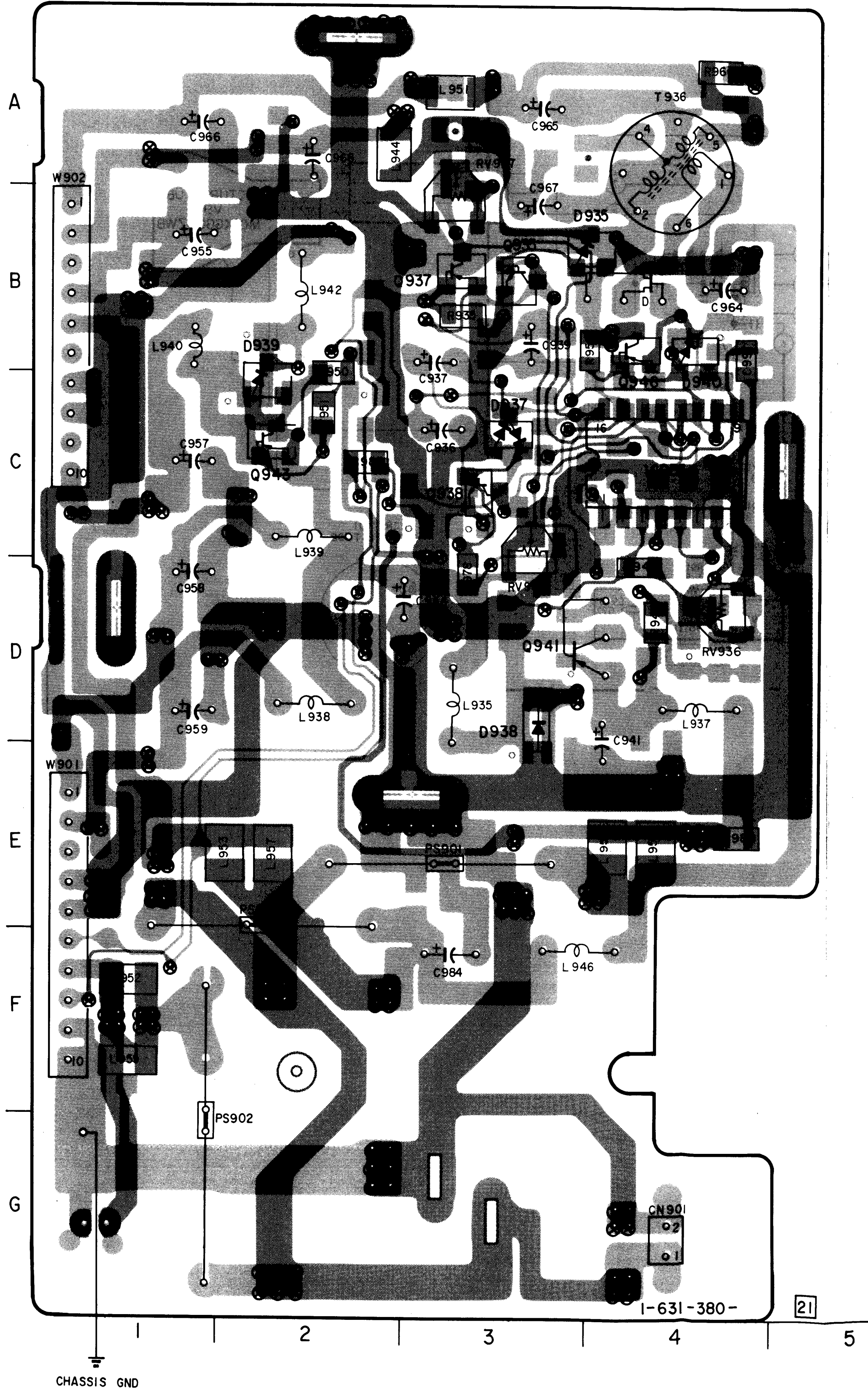
- **SIGNAL PATH (ANALOG)**

	VIDEO SIGNAL			AUDIO SIGNAL
	CHROMA	Y	Y/CHROMA	
REC				
PB		⇨		

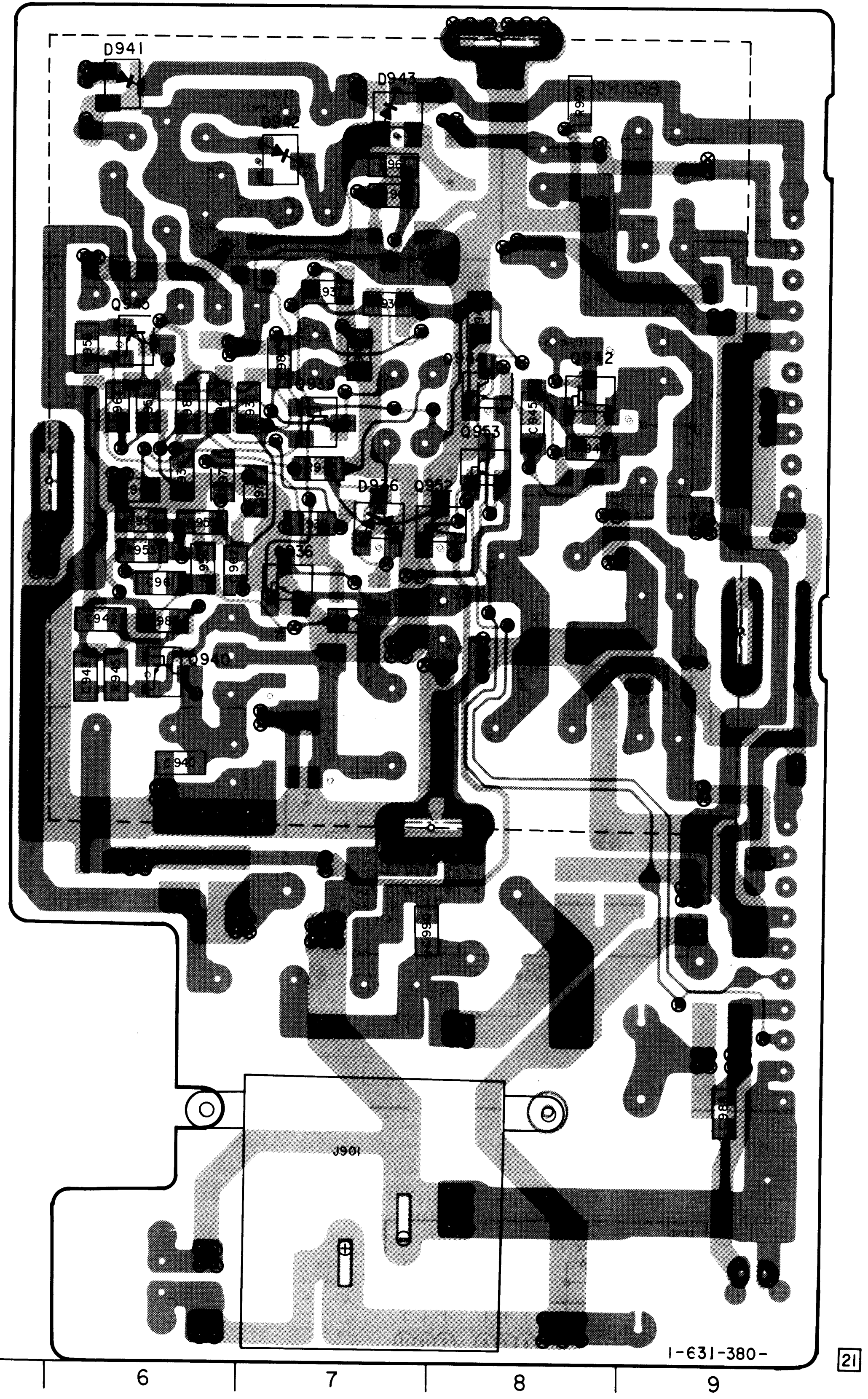
PS-225P (POWER SUPPLY) PRINTED WIRING BOARDS

— Ref. No. PS-225P BOARD: 1000 series —

PS-225PBOARD (COMPONENT SIDE)

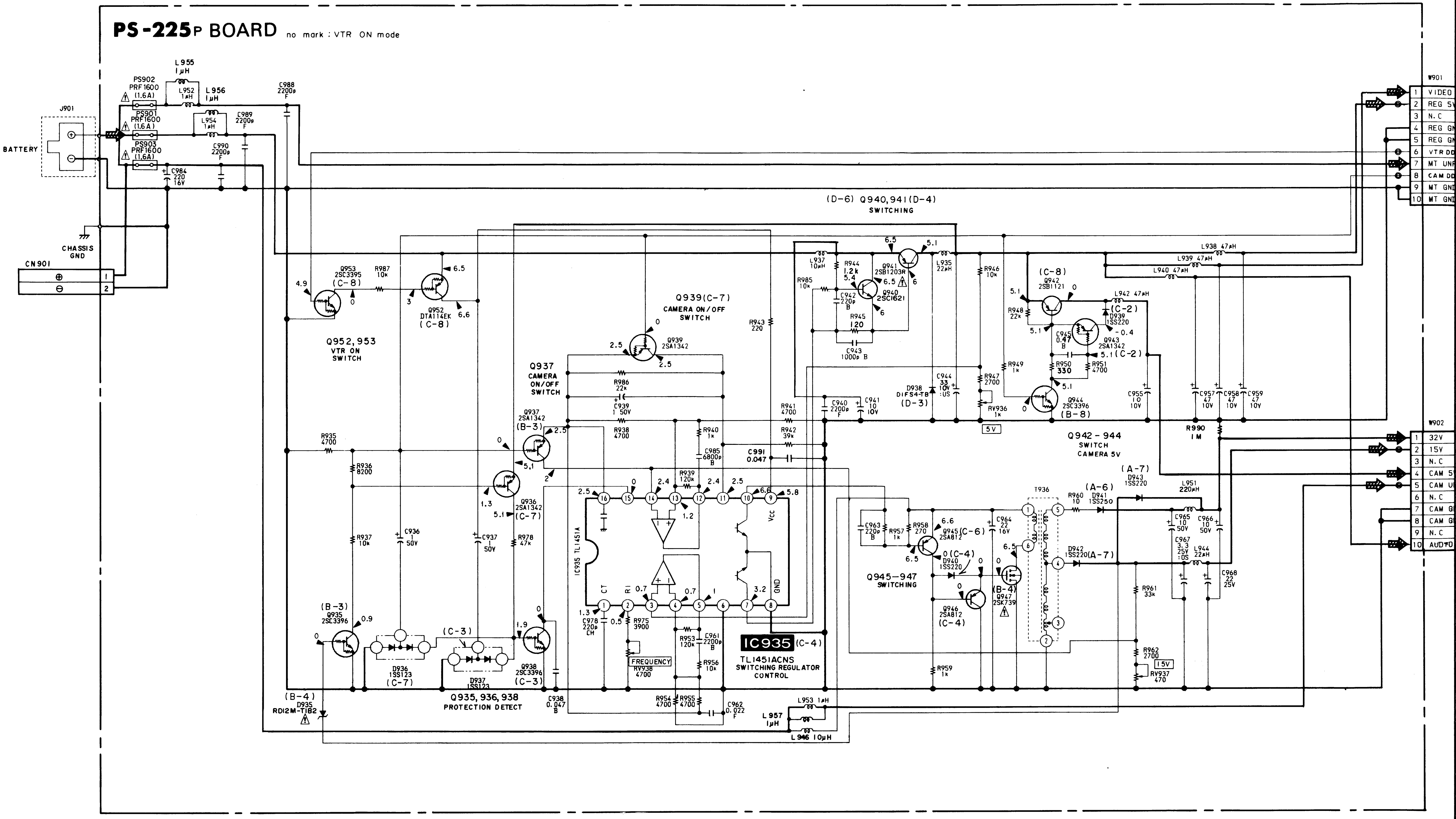

A
B
C
D
E
F
G
W902
C966
C968
L951
C965
T936
944
C967
D935
C955
L942
Q937
C964
L940
D939
C937
C939
D937
C957
Q943
C936
L939
C958
Q941
RV936
L935
D938
C941
L937
C959
L938
W901
PS901
C984
L946
PS902
CN901
2
1
1-631-380-
21
1
2
3
4
5
CHASSIS GND

PS-225PBOARD (CONDUCTOR SIDE)

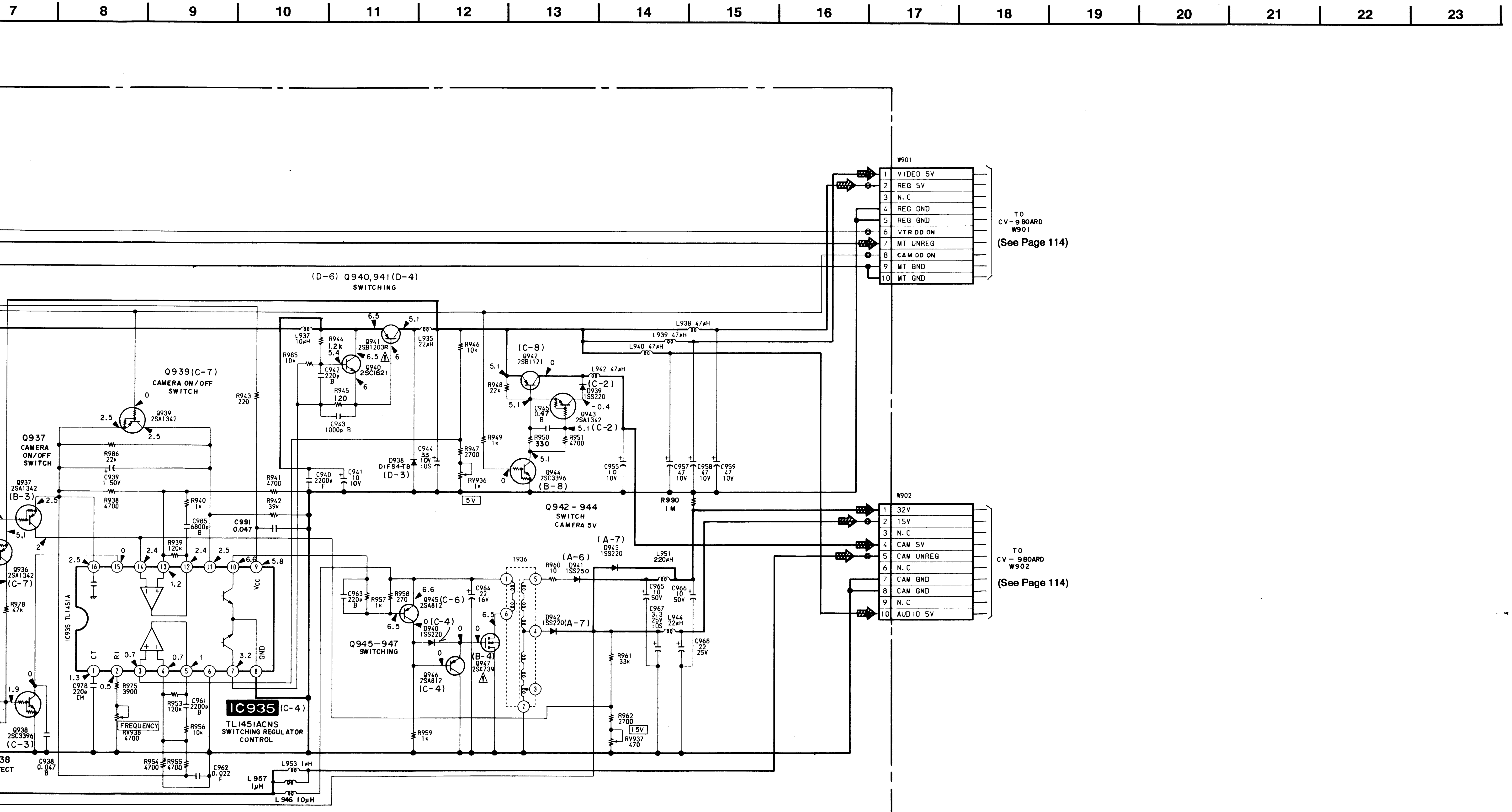

D941
D943
D942
Q953
D936
Q952
Q942
Q940
J901
1-631-380-
21
6
7
8
9

PS-225P (POWER SUPPLY) SCHEMATIC DIAGRAMS

— Ref. No. PS-225P BOARD: 1000 series —



PS-225P BOARD no mark : VTR ON mode
J901
BATTERY
CHASSIS GND
CN901
⊕ 1
⊖ 2
PS902 PRF1600 (1.6A)
PS901 PRF1600 (1.6A)
PS903 PRF1600 (1.6A)
L955 1μH
L952 1μH
L956 1μH
L954 1μH
C988 2200p F
C989 2200p F
C990 2200p F
C984 220 16V
Q953 2SC3395 (C-8)
R987 10k
Q952 DTA114EK (C-8)
Q952,953 VTR ON SWITCH
Q939(C-7) CAMERA ON/OFF SWITCH
Q939 2SA1342
Q937 CAMERA ON/OFF SWITCH
Q937 2SA1342 (B-3)
R986 22k
C939 1 50V
R938 4700
R940 1k
C985 6800p B
R939 120k
C991 0.047
R935 4700
R936 8200
R937 10k
C936 1 50V
C937 1 50V
Q936 2SA1342 (C-7)
R978 47k
IC935 TL1451A
CT RI Vcc GND
C978 220p CH
R975 3900
FREQUENCY RV938 4700
R953 120k
C961 2200p B
R956 10k
R954 4700
R955 4700
C962 0.022 F
IC935 (C-4)
TL1451ACNS SWITCHING REGULATOR CONTROL
Q935 2SC3396 (B-3)
D936 1SS123 (C-7)
D937 1SS123 (C-3)
Q938 2SC3396 (C-3)
C938 0.047 B
Q935, 936, 938 PROTECTION DETECT
D935 RD12M-T1B2 (B-4)
L953 1μH
L957 1μH
L946 10μH
R943 220
R941 4700
R942 39k
C940 2200p F
C941 10 10V
(D-6) Q940,941(D-4) SWITCHING
L937 10μH
R985 10k
R944 1.2k
Q941 2SB1203R
Q940 2SC1621
C942 220p B
R945 120
C943 1000p B
L935 22μH
D938 DIFS4-TB (D-3)
C944 33 10V :US
R946 10k
R947 2700
RV936 1k
5V
Q942 2SB1121 (C-8)
R948 22k
C945 0.47 B
D939 1SS220 (C-2)
Q943 2SA1342 (C-2)
R949 1k
R950 330
R951 4700
Q944 2SC3396 (B-8)
L942 47μH
L938 47μH
L939 47μH
L940 47μH
C955 10 10V
C957 47 10V
C958 47 10V
C959 47 10V
Q942 - 944 SWITCH CAMERA 5V
R990 1M
T936
R960 10
D941 1SS250 (A-6)
D943 1SS220 (A-7)
L951 220μH
C963 220p B
R957 1k
R958 270
Q945 2SA812 (C-6)
C964 22 16V
D940 1SS220 (C-4)
Q946 2SA812 (C-4)
Q947 2SK739 (B-4)
D942 1SS220 (A-7)
Q945-947 SWITCHING
R959 1k
C965 10 50V
C966 10 50V
C967 3.3 25V :OS
L944 22μH
C968 22 25V
R961 33k
R962 2700
15V
RV937 470
W901
1 VIDEO
2 REG 5
3 N.C
4 REG G
5 REG G
6 VTR D
7 MT UN
8 CAM D
9 MT GN
10 MT GN
W902
1 32V
2 15V
3 N.C
4 CAM 5
5 CAM U
6 N.C
7 CAM G
8 CAM G
9 N.C
10 AUDIO


7
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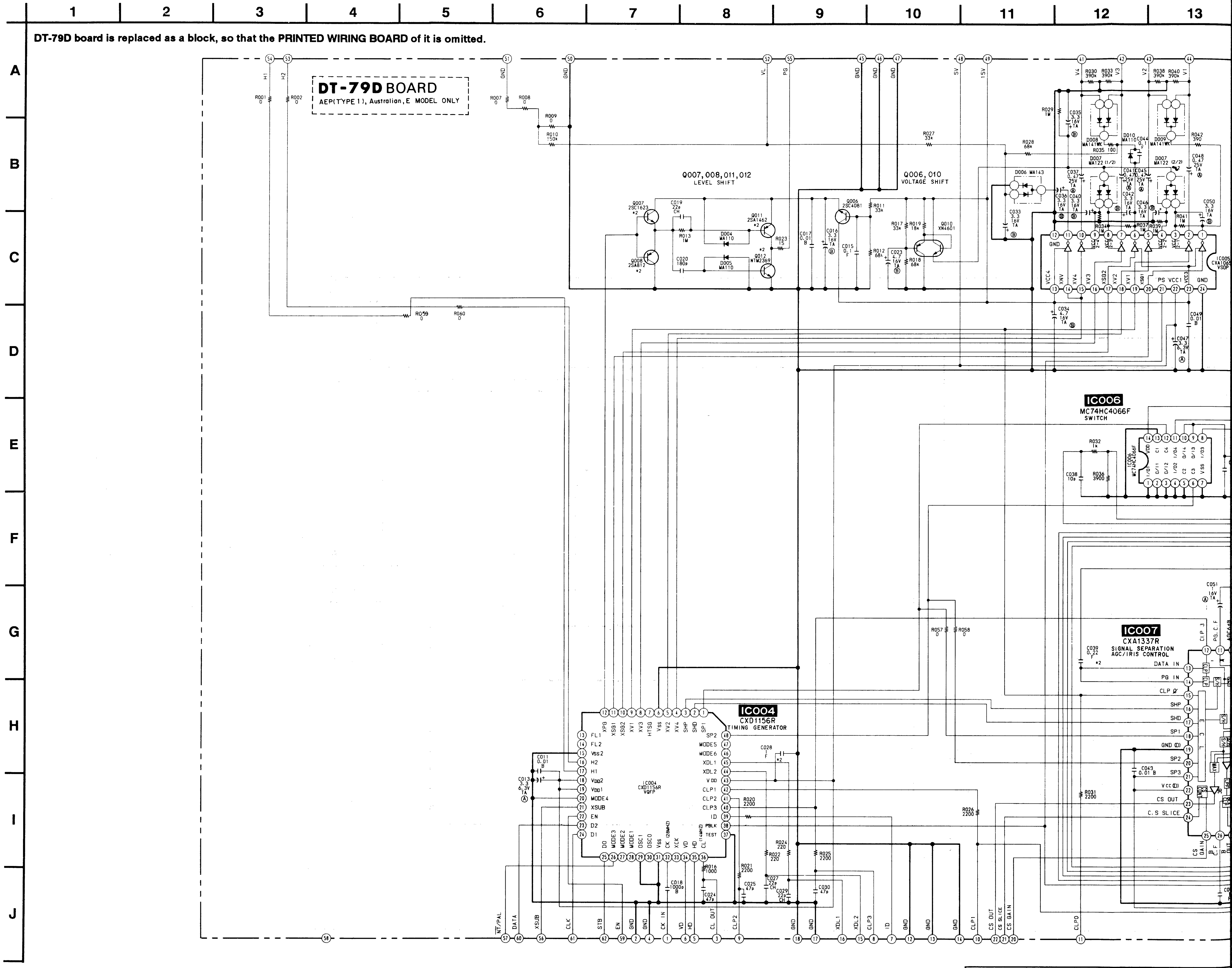
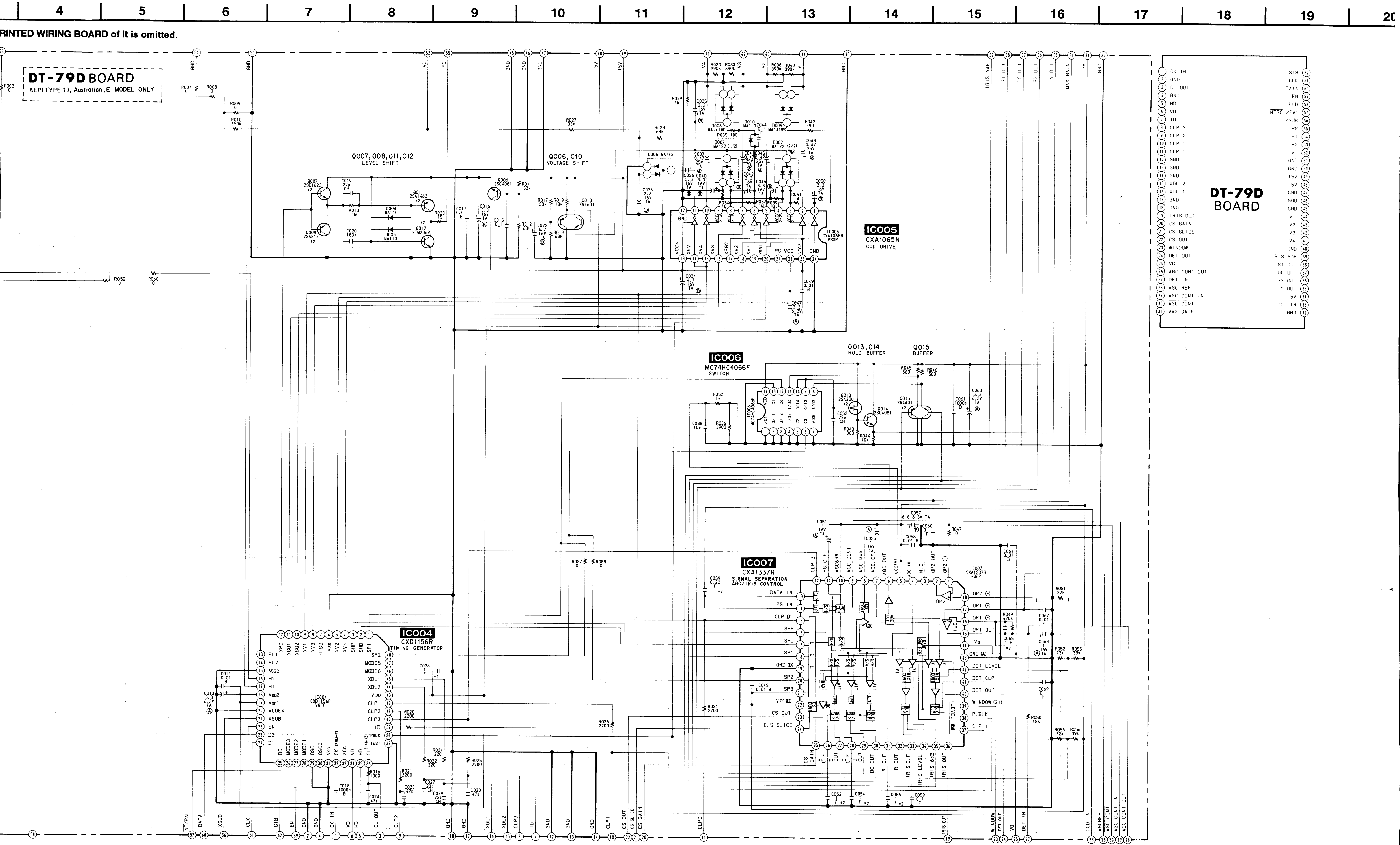
22
23
W901
1 VIDEO 5V
2 REG 5V
3 N.C
4 REG GND
5 REG GND
6 VTR DD ON
7 MT UNREG
8 CAM DD ON
9 MT GND
10 MT GND
TO CV-9 BOARD W901
(See Page 114)
(D-6) Q940,941(D-4)
SWITCHING
Q939(C-7)
CAMERA ON/OFF SWITCH
Q939 2SA1342
Q937 CAMERA ON/OFF SWITCH
Q937 2SA1342 (B-3)
Q936 2SA1342 (C-7)
Q938 2SC3396 (C-3)
Q941 2SB1203R
Q940 2SC1621
L937 10μH
R944 1.2k
R985 10k
C942 220p B
R945 120
C943 1000p B
R943 220
L935 22μH
R946 10k
(C-8)
Q942 2SB1121
L942 47μH
(C-2)
D939 1SS220
Q943 2SA1342
C945 0.47 B
R948 22k
R950 330
R951 4700
R949 1k
R947 2700
RV936 1k
5V
D938 D1FS4-TB (D-3)
C944 33 10V :US
Q944 2SC3396 (B-8)
C955 10 10V
L938 47μH
L939 47μH
L940 47μH
C957 47 10V
C958 47 10V
C959 47 10V
R990 1M
Q942-944 SWITCH CAMERA 5V
R986 22k
C939 1 50V
R938 4700
R940 1k
C985 6800p B
R941 4700
R942 39k
C940 2200p F
C941 10 10V
C991 0.047
R939 120k
IC935 TL1451A
Vcc
GND
CT
RI
C978 220p CH
R975 3900
FREQUENCY RV938 4700
R953 120k
C961 2200p B
R956 10k
R954 4700
R955 4700
C962 0.022 F
R978 47k
C938 0.047 B
IC935 (C-4)
TL1451ACNS SWITCHING REGULATOR CONTROL
L953 1μH
L957 1μH
L946 10μH
C963 220p B
R957 1k
R958 270
Q945 (C-6) 2SA812
D940 1SS220 (C-4)
C964 22 16V
Q947 2SK739 (B-4)
Q946 2SA812 (C-4)
Q945-947 SWITCHING
R959 1k
T936
R960 10
(A-6) D941 1SS250
(A-7) D943 1SS220
D942 1SS220 (A-7)
L951 220μH
C965 10 50V
C966 10 50V
C967 3.3 25V :OS
L944 22μH
C968 22 25V
R961 33k
R962 2700
15V
RV937 470
W902
1 32V
2 15V
3 N.C
4 CAM 5V
5 CAM UNREG
6 N.C
7 CAM GND
8 CAM GND
9 N.C
10 AUDIO 5V
TO CV-9 BOARD W902
(See Page 114)

DT-79D (CCD DRIVE, TIMING GENERATOR) SCHEMATIC DIAGRAMS

DT-79D board is replaced as a block, so that the PRINTED WIRING BOARD of it is omitted.


DT-79D BOARD
AEP(TYPE 1), Australian, E MODEL ONLY
Q007,008,011,012
LEVEL SHIFT
Q006,010
VOLTAGE SHIFT
IC006
MC74HC4066F
SWITCH
IC007
CXA1337R
SIGNAL SEPARATION
AGC/IRIS CONTROL
IC004
CXD1156R
TIMING GENERATOR
IC005

RINTED WIRING BOARD of it is omitted.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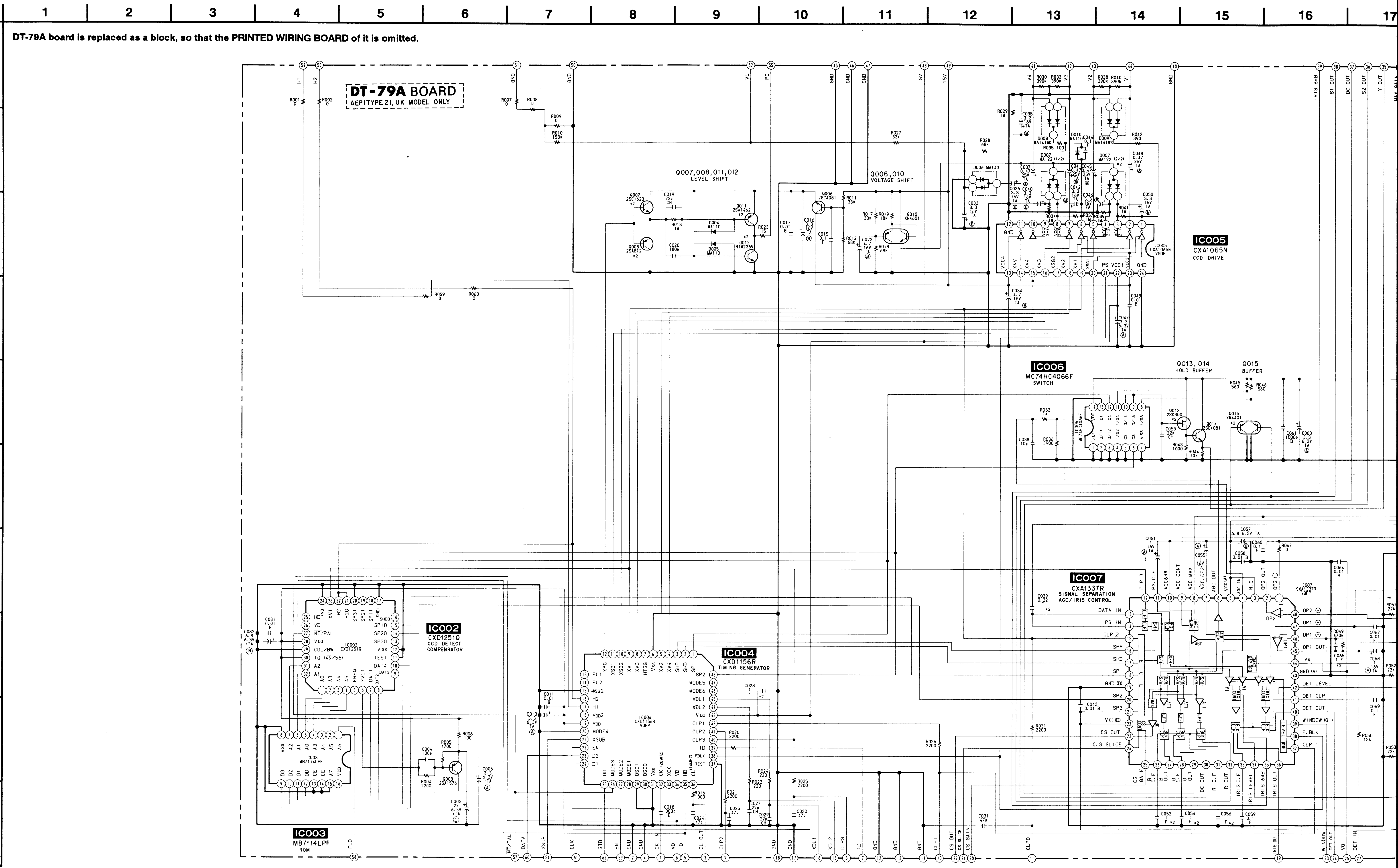
DT-79D BOARD
AEP(TYPE 1), Australian, E MODEL ONLY
Q007,008,011,012
LEVEL SHIFT
Q006, 010
VOLTAGE SHIFT
IC005
CXA1065N
CCD DRIVE
IC006
MC74HC4066F
SWITCH
Q013,014
HOLD BUFFER
Q015
BUFFER
IC007
CXA1337R
SIGNAL SEPARATION
AGC/IRIS CONTROL
IC004
CXD1156R
TIMING GENERATOR
DT-79D
BOARD
CK IN
GND
CL OUT
GND
HD
VD
ID
CLP 3
CLP 2
CLP 1
CLP 0
GND
GND
GND
XDL 2
XDL 1
GND
GND
IRIS OUT
CS GAIN
CS SLICE
CS OUT
WINDOW
DET OUT
VG
AGC CONT OUT
DET IN
AGC REF
AGC CONT IN
AGC CONT
MAX GAIN
STB
CLK
DATA
EN
FLD
NTSC /PAL
XSUB
PG
H1
H2
VL
GND
GND
15V
5V
GND
GND
GND
V1
V2
V3
V4
GND
IRIS 6DB
S1 OUT
DC OUT
S2 OUT
Y OUT
5V
CCD IN
GND

CAMERA CAMERA

DT-79A (CCD DRIVE, TIMING GENERATOR) SCHEMATIC DIAGRAMS

DT-79A board is replaced as a block, so that the PRINTED WIRING BOARD of it is omitted.



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A
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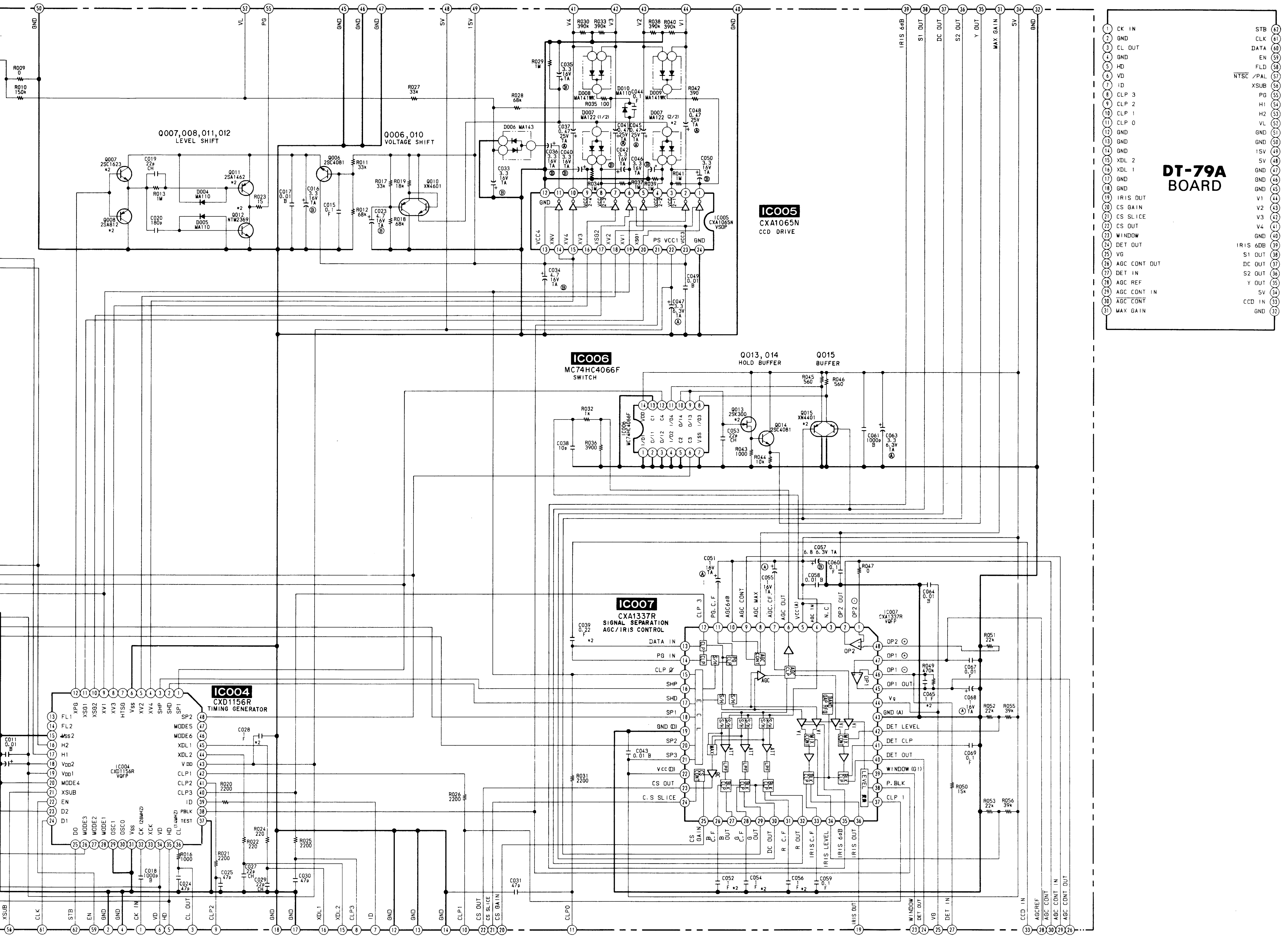
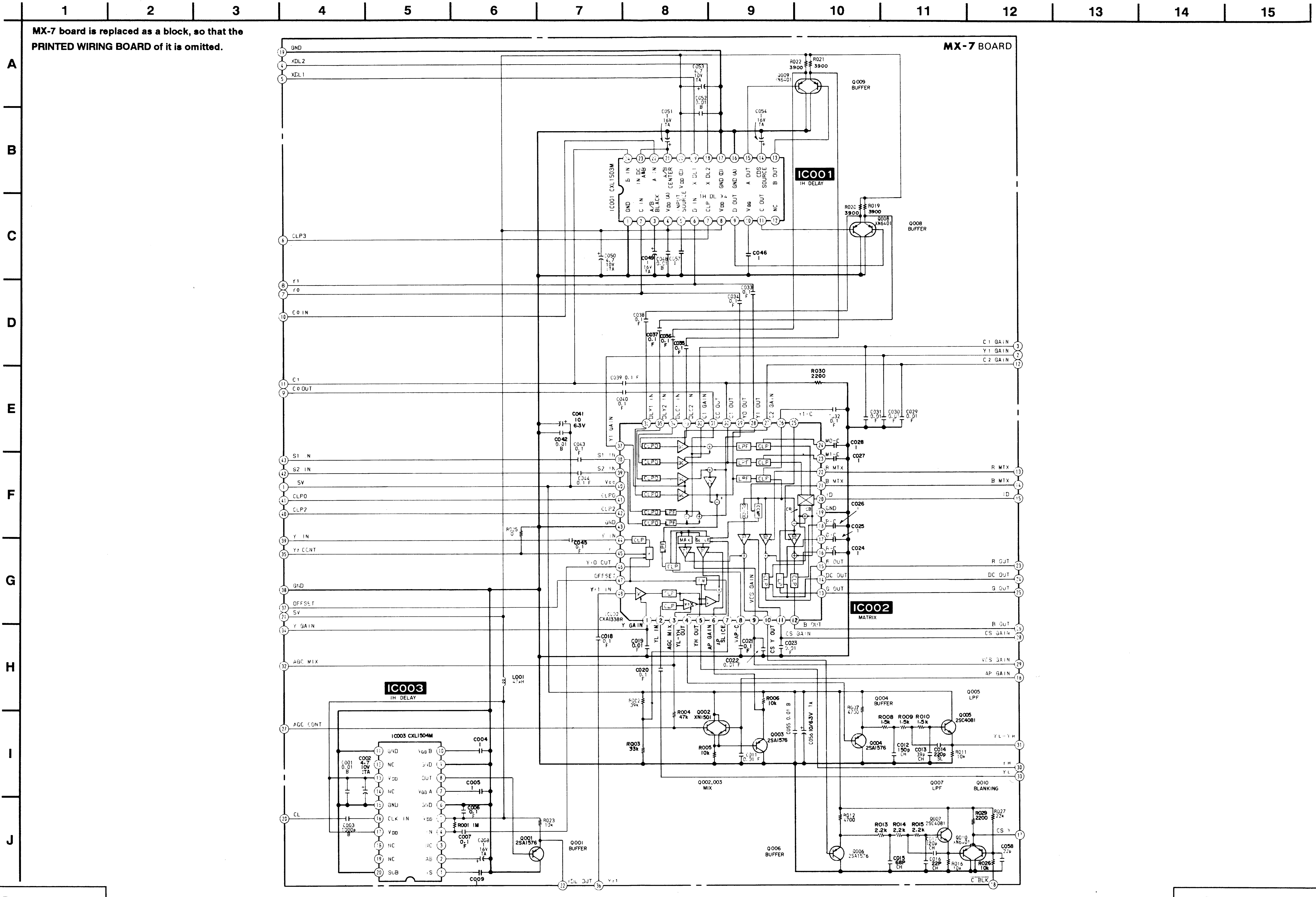
D
E
F
G
H
I
J
DT-79A BOARD
AEP(TYPE 2), UK MODEL ONLY
Q007,008,011,012 LEVEL SHIFT
Q006,010 VOLTAGE SHIFT
IC005 CXA1065N CCD DRIVE
IC006 MC74HC4066F SWITCH
Q013, 014 HOLD BUFFER
Q015 BUFFER
IC007 CXA1337R SIGNAL SEPARATION AGC/IRIS CONTROL
IC002 CXD1251Q CCD DETECT COMPENSATOR
IC004 CXD1156R TIMING GENERATOR
IC003 MB7114LPF ROM
Q003 2SA1576
Q007 2SC1623
Q008 2SA812
Q011 2SA1462
Q012 NTM2369
Q006 2SC4081
Q010 XN4601
Q013 2SK300
Q014 2SC4081
Q015 XN4401
D004 MA110
D005 MA110
D006 MA143
D007 MA122
D008 MA141WK
D009 MA141WK
D010 MA110
H1
H2
GND
VL
PG
SV
15V
V4
V3
V2
V1
IRIS 6dB
S1 OUT
DC OUT
S2 OUT
Y OUT
NT/PAL
DATA
XSUB
CLK
STB
EN
CK IN
VD
HD
CL OUT
CLP2
XDL1
XDL2
CLP3
ID
CLP1
CS OUT
CS SLICE
CS GAIN
CLP0
IRIS OUT
WINDOW
DET OUT
DET IN
DATA IN
PG IN
CLP 0
SHP
SHD
SP1
SP2
SP3
Vcc
C.S SLICE
OP2 ⊕
OP1 ⊕
OP1 ⊖
OP1 OUT
Vg
GND (A)
DET LEVEL
DET CLP
WINDOW (1)
P. BLK
CLP 1
AGC CONT
AGC MAX
AGC C.F
AGC OUT


IC004
CXD1156R
TIMING GENERATOR
IC005
CXA1065N
CCD DRIVE
IC006
MC74HC4066F
SWITCH
IC007
CXA1337R
SIGNAL SEPARATION
AGC/IRIS CONTROL
Q007,008,011,012
LEVEL SHIFT
Q006,010
VOLTAGE SHIFT
Q013,014
HOLD BUFFER
Q015
BUFFER
DT-79A
BOARD
1 CK IN
2 GND
3 CL OUT
4 GND
5 HD
6 VD
7 ID
8 CLP 3
9 CLP 2
10 CLP 1
11 CLP 0
12 GND
13 GND
14 GND
15 XDL 2
16 XDL 1
17 GND
18 GND
19 IRIS OUT
20 CS GAIN
21 CS SLICE
22 CS OUT
23 WINDOW
24 DET OUT
25 VG
26 AGC CONT OUT
27 DET IN
28 AGC REF
29 AGC CONT IN
30 AGC CONT
31 MAX GAIN
STB 62
CLK 61
DATA 60
EN 59
FLD 58
NTSC /PAL 57
XSUB 56
PG 55
H1 54
H2 53
VL 52
GND 51
GND 50
15V 49
5V 48
GND 47
GND 46
GND 45
V1 44
V2 43
V3 42
V4 41
GND 40
IRIS 6DB 39
S1 OUT 38
DC OUT 37
S2 OUT 36
Y OUT 35
5V 34
CCD IN 33
GND 32

MX-7 (CAMERA SIGNAL MATRIX) SCHEMATIC DIAGRAMS

MX-7 board is replaced as a block, so that the PRINTED WIRING BOARD of it is omitted.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14
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A
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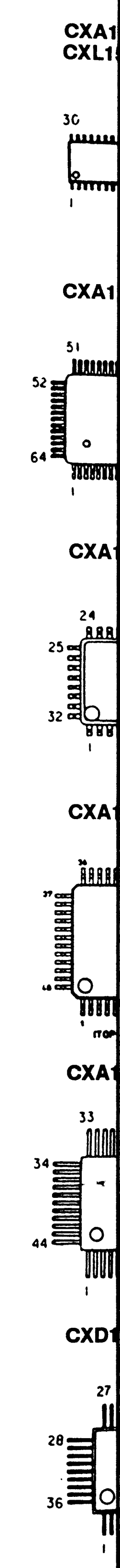
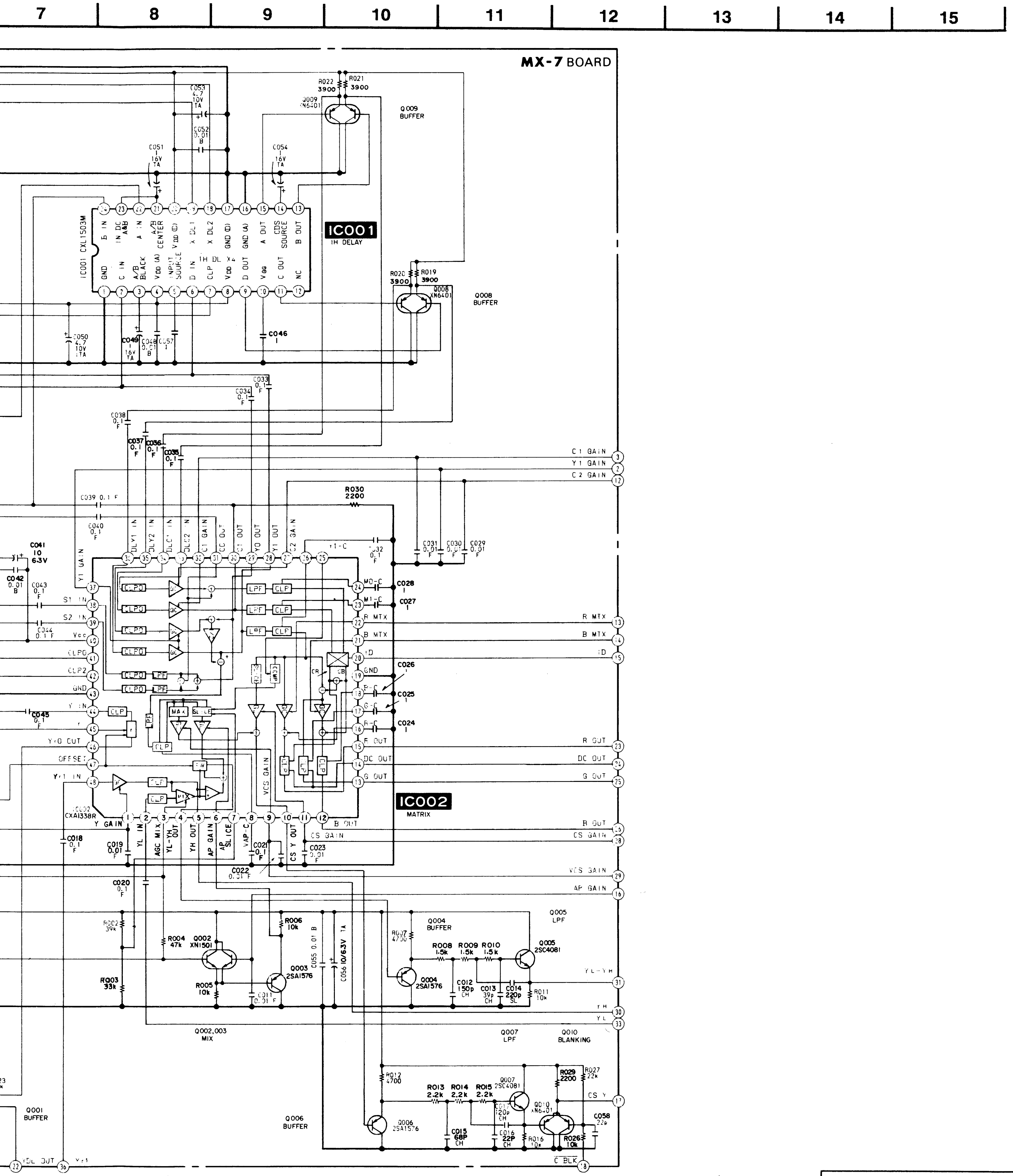
C
D
E
F
G
H
I
J
MX-7 BOARD
GND
XDL2
XDL1
CLP3
Y1
Y0
C0 IN
C1
C0 OUT
S1 IN
S2 IN
5V
CLP0
CLP2
Y IN
Y/ CONT
GND
OFFSET
5V
Y GAIN
AGC MIX
AGC CONT
CL
IC001
1H DELAY
IC001 CXL1503M
1H DL X4
R022 3900
R021 3900
Q009 XN6401
Q009 BUFFER
R020 3900
R019 3900
Q008 XN6401
Q008 BUFFER
C053 4.7 10V TA
C052 0.01 B
C051 1 16V TA
C054 1 16V TA
C050 4.7 10V TA
C049 1 16V TA
C048 0.01 B
C057
C046 1
C033 0.1 F
C034 0.1 F
C038 0.1 F
C037 0.1 F
C036 0.1 F
C035 0.1 F
C039 0.1 F
C040 0.1 F
C041 10 6.3V
C042 0.01 B
C043 1
C044 0.1 F
C045 1
R025 0
R030 2200
C031 0.01 F
C030 0.1 F
C029 0.01 F
C032 1
C028 1
C027 1
C026
C025 1
C024 1
C1 GAIN
Y1 GAIN
C2 GAIN
R MTX
B MTX
ID
R OUT
DC OUT
G OUT
B OUT
CS GAIN
VCS GAIN
AP GAIN
Y L + H
Y H
Y L
CS Y
C BLK
IC002
MATRIX
IC002 CXA1338R
Y GAIN
YL IN
AGC MIX
YL-YH OUT
YH OUT
AP GAIN
AP SLICE
VAP-C
CS Y OUT
C018 1
C019 0.01 F
C020 0.1 F
C021 0.1 F
C022 0.01 F
C023 0.01
L001 47μH
IC003
1H DELAY
IC003 CXL1504M
C001 0.01 B
C002 4.7 10V TA
C003 1000p B
C004 1
C005 1
C006 0.1 F
C007 0.1 F
C008 1 16V TA
C009 1
R001 1M
R023 10k
Q001 2SA1576
Q001 BUFFER
R002 39k
R003 33k
R004 47k
Q002 XN1501
R005 10k
R006 10k
Q003 2SA1576
C011 0.01 F
C055 0.01 B
C056 10/63V TA
Q002,003 MIX
R007 4700
Q004 BUFFER
Q004 2SA1576
R008 1.5k
R009 1.5k
R010 1.5k
Q005 LPF
Q005 2SC4081
C012 150p CH
C013 39p CH
C014 220p SL
R011 10k
Q006 BUFFER
Q006 2SA1576
Q007 LPF
Q010 BLANKING
R012 4700
R013 2.2k
R014 2.2k
R015 2.2k
Q007 2SC4081
C015 68P CH
C016 22P CH
C017 120p CH
R016 10k
R029 2200
R027 22k
R026 10k
Q010 XN6401
C058 22k
XDL OUT
Y+1

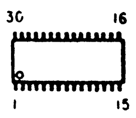
4-3. SEM


CXA1
CXL1
30
1
CXA1
51
52
64
1
CXA1
24
25
32
CXA1
37
48
1
(TOP)
CXA1
33
34
44
1
CXD1
27
28
36
1

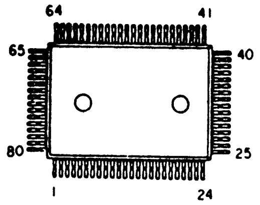

7
8
9
10
11
12
13
14
15
MX-7 BOARD
IC001
1H DELAY
IC001 CXL1503M
Q009 BUFFER
Q008 BUFFER
IC002
MATRIX
IC002 CXA1338R
C1 GAIN
Y1 GAIN
C2 GAIN
R MTX
B MTX
ID
R OUT
DC OUT
G OUT
B OUT
CS GAIN
VCS GAIN
AP GAIN
YL+YH
YH
YL
CS Y
C BLK
Q004 BUFFER
Q005 LPF
Q002,003 MIX
Q007 LPF
Q010 BLANKING
Q006 BUFFER
Q001 BUFFER
YL OUT
R030 2200

4-3. SEMICONDUCTORS

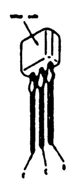
CXA1127MT
CXL1501M



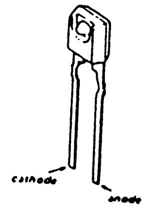
CXP80116-624Q


64
41
65
40
80
25
1
24

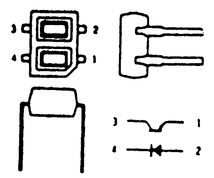
2SA1175-HFE



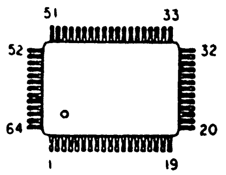
EE-TP109


cathode
anode

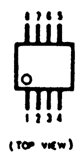
TLP907



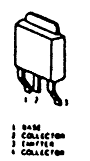
CXA1200BQ


51
33
52
32
64
20
1
19

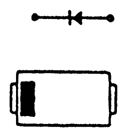
LA7293M
MM1036XF


8 7 6 5
1 2 3 4
(TOP VIEW)

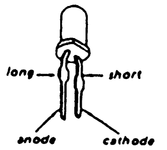
2SA1341


1 BASE
2 COLLECTOR
3 EMITTER
4 COLLECTOR

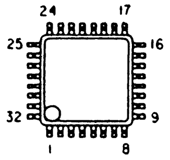
D1FS4-TB



GL3PR8
TLR124


long
short
anode
cathode

CXA1201Q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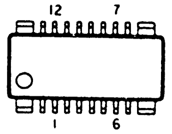
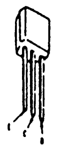
16
32
9
1
8

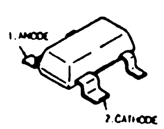
LB1631MT



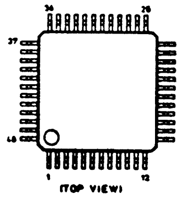
2SA1344



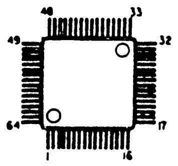
GL-1HD51


1. ANODE
2. CATHODE

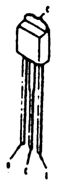
CXA1202R



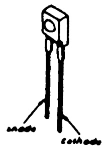
MB670479U
MC68HC05N4-SC406656


48
33
49
32
64
17
1
16

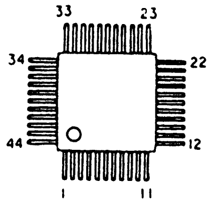
2SA1385
2SB1040A-5



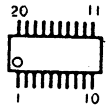
GL452S


anode
cathode

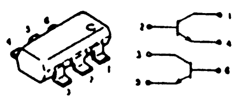
CXA1204Q


33
23
34
22
44
12
1
11

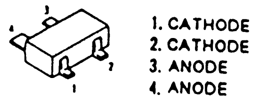
MB88341PFV



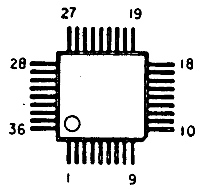
XN6501



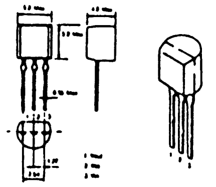
DWA010


1. CATHODE
2. CATHODE
3. ANODE
4. ANODE

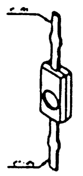
CXD1159Q


27
19
28
18
36
10
1
9

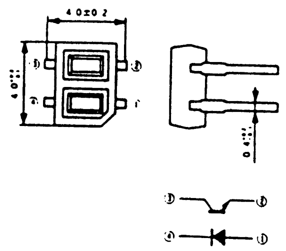
S-81350AG-REG



1T32-2
1T33C



GP2S09-B



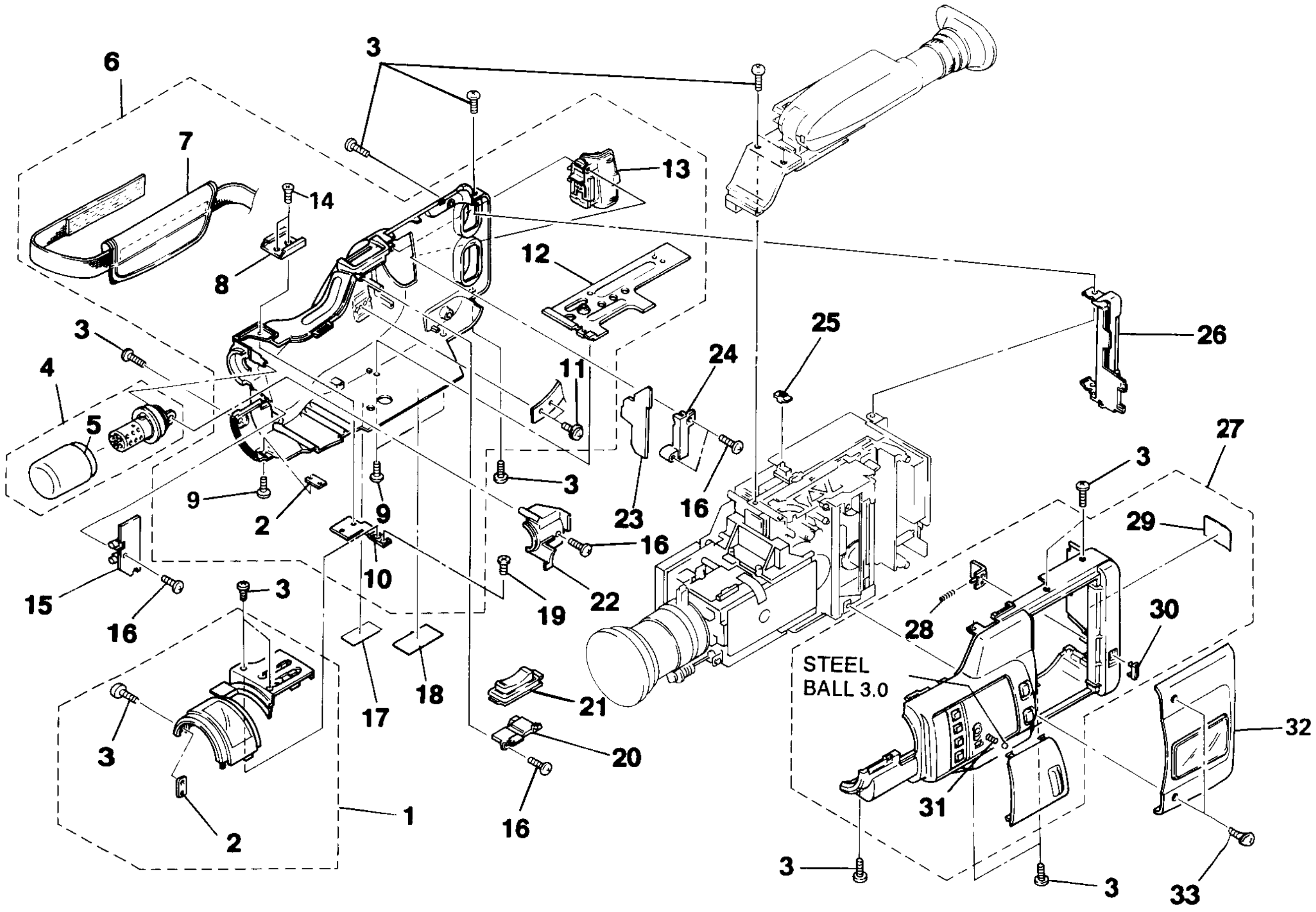
SECTION 5
EXPLODED VIEWS

NOTE:

- –XX, –X mean standardized parts, so they may have some differences from the original one.
- The construction parts of an assembled part are indicated with a collation number in the remark column.
- Items marked "*" are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.
- The mechanical parts with no reference number in the exploded views are not supplied.

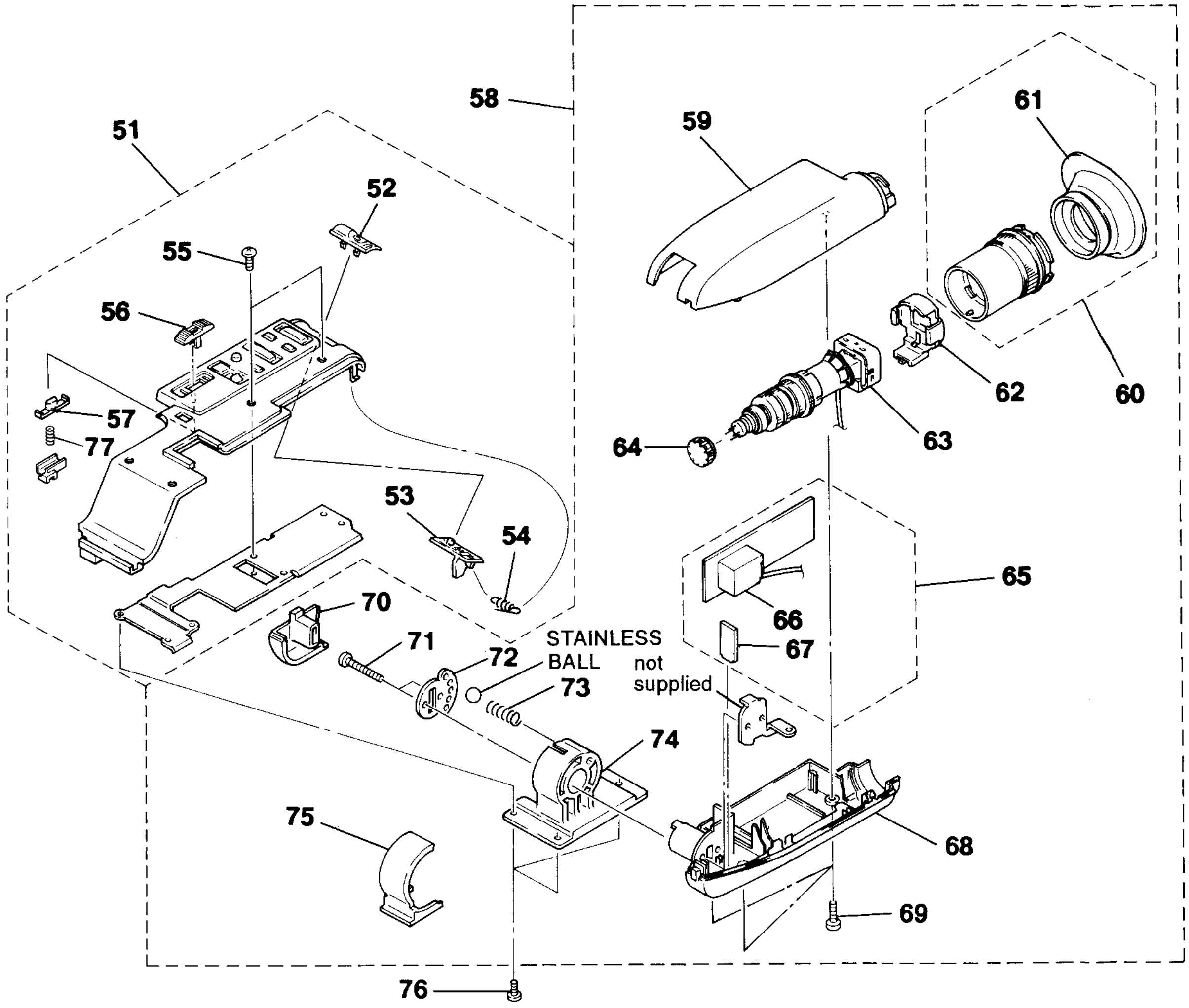
The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety.
Replace only with part number specified.

5-1. CABINET (R, L) ASSEMBLY



No.	Part No.	Description	Remark
1	X-3733-924-1	CABINET (FRONT) ASSY	1-3
2	3-732-912-01	JOINT, L/R	
3	3-719-381-01	SCREW (M2X4)	
4	1-542-125-21	MICROPHONE (C-2027)	5
5	3-707-650-11	SCREEN, WIND	
6	X-3733-923-1	CABINET (LEFT) ASSY (E, Australian)	2, 7-14
	X-3733-990-1	CABINET (LEFT) ASSY (AEP, UK)	2, 7-14
7	3-719-323-01	BELT, GRIP	
8	3-724-511-01	SHOE, ACCESSORY	
9	3-719-381-31	SCREW (M2X3)	
10	3-737-723-02	RETAINER, SHOE	
11	3-669-480-21	+ PTPWH 2	
12	*3-732-911-01	SHEET METAL, TRIPOD	
13	X-3732-953-1	KNOB ASSY, SP	
14	3-719-831-21	SCREW (M2X4)	
15	*A-7061-958-A	MA-37P BOARD, COMPLETE	
16	3-713-790-31	SCREW (M2X8), TAPPING, P3	
17	*3-704-235-01	LABEL, CAUTION (UK MODEL)	
18	*3-741-510-01	LABEL, MODEL NUMBER (AE) (AEP(TYPE 1))	
	*3-741-542-01	LABEL, MODEL NUMBER (AE) (AEP(TYPE 2))	
	*3-741-543-01	LABEL, MODEL NUMBER (UK) (UK)	
	*3-741-552-01	LABEL, MODEL NUMBER (E) (E, Australian)	
19	3-713-790-01	SCREW (M2X6), TAPPING, P3	
20	*3-732-937-01	RETAINER, ZOOM BUTTON	
21	1-571-837-11	SWITCH, PUSH (ZOOM SW) (S901)	
22	3-737-737-01	HOUSING, MICROPHONE	
23	*1-631-831-21	RC-29P BOARD	
24	*3-732-928-01	STOPPER, RC	
25	3-732-926-01	BUTTON, EDIT	
26	3-732-924-01	BLIND, L/R	
27	X-3733-989-1	CABINET (RIGHT) ASSY	28-31
28	3-426-508-00	SPRING, COMPRESSION	
29	*3-719-683-01	LABEL, BATTERY FITTING	
30	3-732-905-01	BUTTON, BATTERY RELEASE	
31	3-576-098-00	SPRING, COMPRESSION	
32	X-3733-992-1	LID ASSY, CASSETTE	
33	3-733-912-01	SCREW (M2X2.5), SPECIAL HEAD	

5-2. CABINET (UPPER), EVF ASSEMBLY (TYPE A)

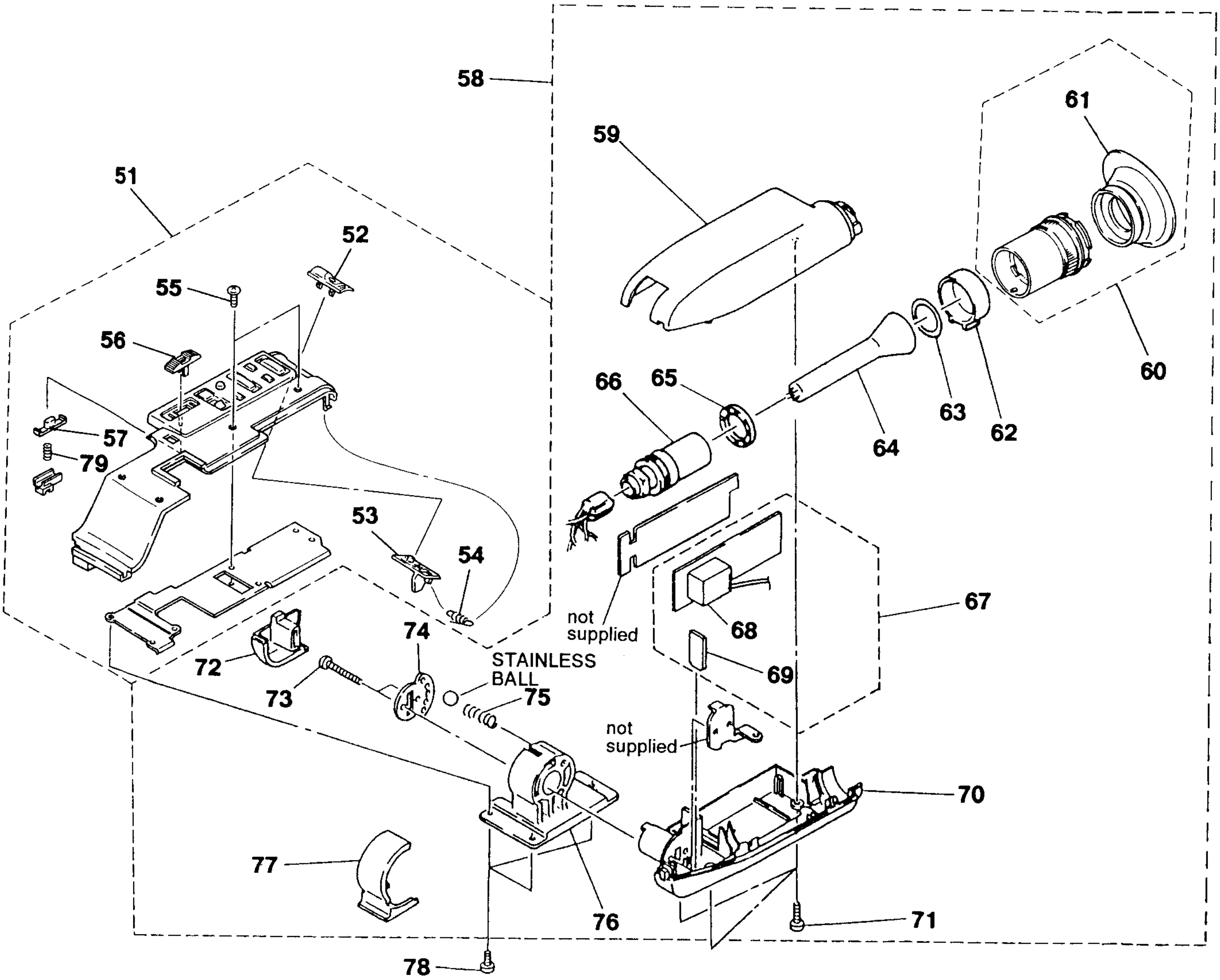


The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety.
Replace only with part number specified.

****(A TYPE)****

No.	Part No.	Description	Remark
51	X-3733-991-1	CABINET (UPPER) ASSY (AEP, UK)	52-57, 77
	X-3737-724-1	CABINET (UPPER) ASSY (E, Australian)	52-57, 77
52	3-732-919-01	BUTTON, EJECT	
53	3-732-920-01	LOCK, EJECT	
54	3-669-440-00	SPRING, TENSION	
55	3-719-381-01	SCREW (M2X4)	
56	3-718-226-01	BUTTON, POWER	
57	*3-718-257-11	BUTTON, PUSH, POWER	
58	*A-7019-146-A	EVF COMPLETE ASSY (TYPE A)	59-75
59	3-732-948-01	CABINET (UPPER), EVF	
60	A-7080-715-A	HOLDER BLOCK ASSY, FINDER	61
61	3-733-922-01	EYE CUP	
62	X-3732-910-1	HOLDER ASSY, CRT (TYPE A)	
63	⚠1-452-482-11	CRT ASSY (M01JYZ60WB) (VF-14P BOARD) (TYPE A)	
64	1-540-019-21	SOCKET ASSY, CRT (W901) (TYPE A)	
65	*A-7061-609-A	VF-14P BOARD, COMPLETE (TYPE A)	66, 67
66	⚠1-439-431-11	TRANSFORMER ASSY, FLYBACK (T901) (TYPE A)	
67	*1-629-384-21	LD-13P BOARD (TYPE A)	
68	X-3732-911-1	CABINET (LOWER) ASSY, EVF (TYPE A)	
69	3-713-790-31	SCREW (M2X8), TAPPING, P3	
70	3-732-949-01	BLIND, EVF CABINET (LOWER)	
71	3-732-987-01	SCREW (M2X20), +P	
72	3-732-947-01	PLATE, LOCK	
73	3-732-946-01	SPRING, COMPRESSION	
74	*3-732-944-01	BEARING, EVF	
75	3-732-950-01	BLIND, EVF	
76	3-732-988-01	SCREW (M2X2.5)	
77	3-303-973-00	SPRING, COMPRESSION	

5-3. CABINET (UPPER), EVF ASSEMBLY (TYPE B)



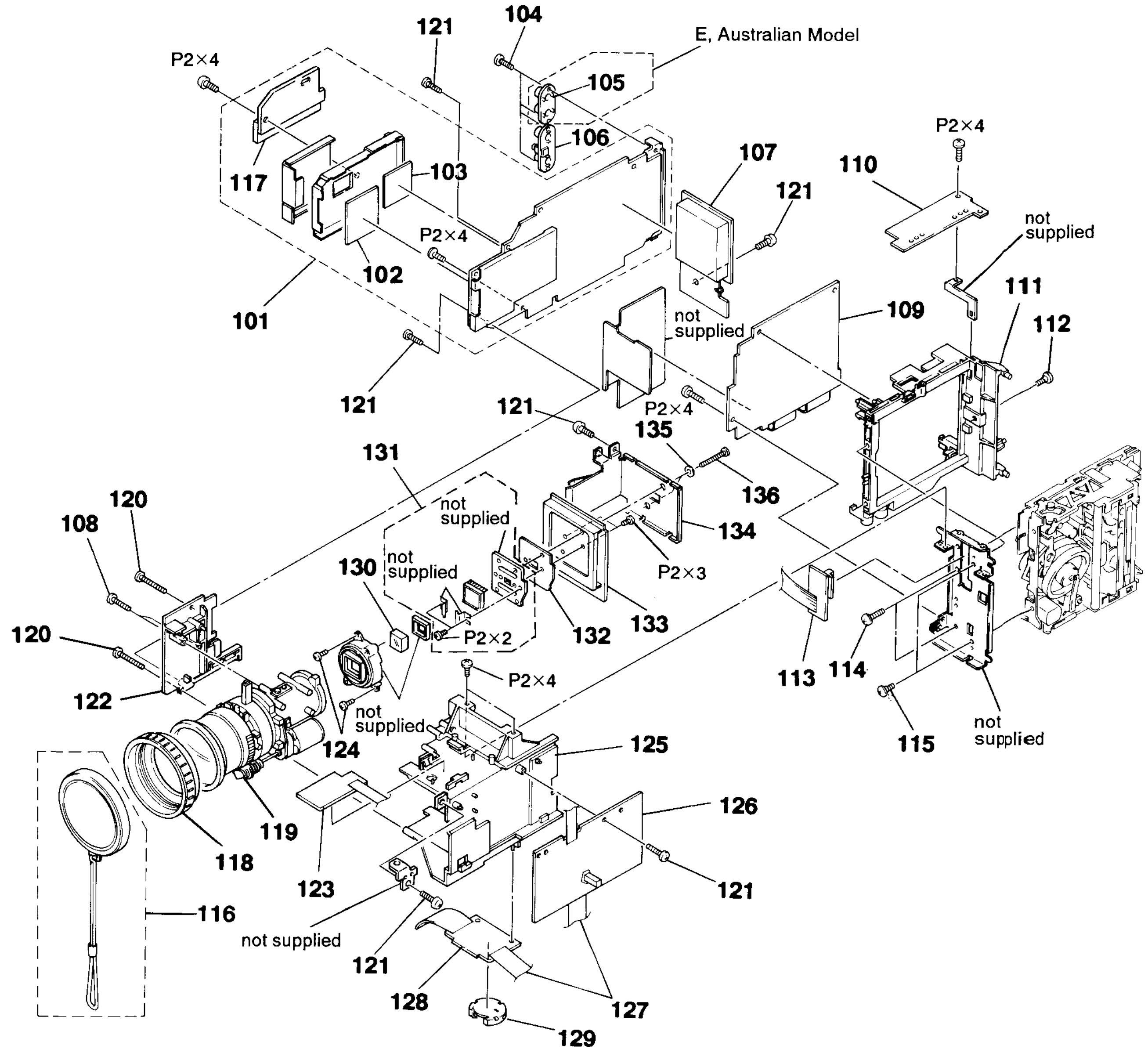
The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety.
Replace only with part number specified.

****(B TYPE)****

No.	Part No.	Description	Remark
51	X-3733-991-1	CABINET (UPPER) ASSY (AEP, UK)	52-57, 79
	X-3737-724-1	CABINET (UPPER) ASSY (E, Australian)	52-57, 79
52	3-732-919-01	BUTTON, EJECT	
53	3-732-920-01	LOCK, EJECT	
54	3-669-440-00	SPRING, TENSION	
55	3-719-381-01	SCREW (M2X4)	
56	3-718-226-01	BUTTON, POWER	
57	*3-718-257-11	BUTTON, PUSH, POWER	
58	A-7019-197-A	EVF COMPLETE ASSY (TYPE B)	59-77
59	3-732-948-01	CABINET (UPPER), EVF	
60	A-7080-715-A	HOLDER BLOCK ASSY, FINDER	61
61	3-733-922-01	EYE CUP	
62	X-3724-509-1	HOLDER ASSY, CRT (TYPE B)	
63	3-724-570-01	RING, CRT FIXED (TYPE B)	
64	⚠.1-546-085-11	CATHODE-RAY TUBE, B/W (M01KGG007WB) (VF-22P BOARD)(TYPE B)	
65	3-724-549-01	LOCK, CRT (TYPE B)	
66	⚠.1-451-310-21	DEFLECTION YOKE (B/W) (TYPE B)	
67	*A-7062-012-A	VF-22P BOARD, COMPLETE (TYPE B)	68, 69
68	⚠.1-439-428-11	TRANSFORMER ASSY, FLYBACK (T901)(TYPE B)	
69	*1-630-067-21	LD-17P BOARD (TYPE B)	
70	X-3732-911-1	CABINET (LOWER) ASSY, EVF	
71	3-713-790-31	SCREW (M2X8), TAPPING, P3	
72	3-732-949-01	BLIND, EVF CABINET (LOWER)	
73	3-732-987-01	SCREW (M2X20), +P	
74	3-732-947-01	PLATE, LOCK	
75	3-732-946-01	SPRING, COMPRESSION	
76	*3-732-944-01	BEARING, EVF	
77	3-732-950-01	BLIND, EVF	
78	3-732-988-01	SCREW (M2X2.5)	
79	3-303-973-00	SPRING, COMPRESSION	

5-4. CAMERA AND MAIN BOARD ASSEMBLY

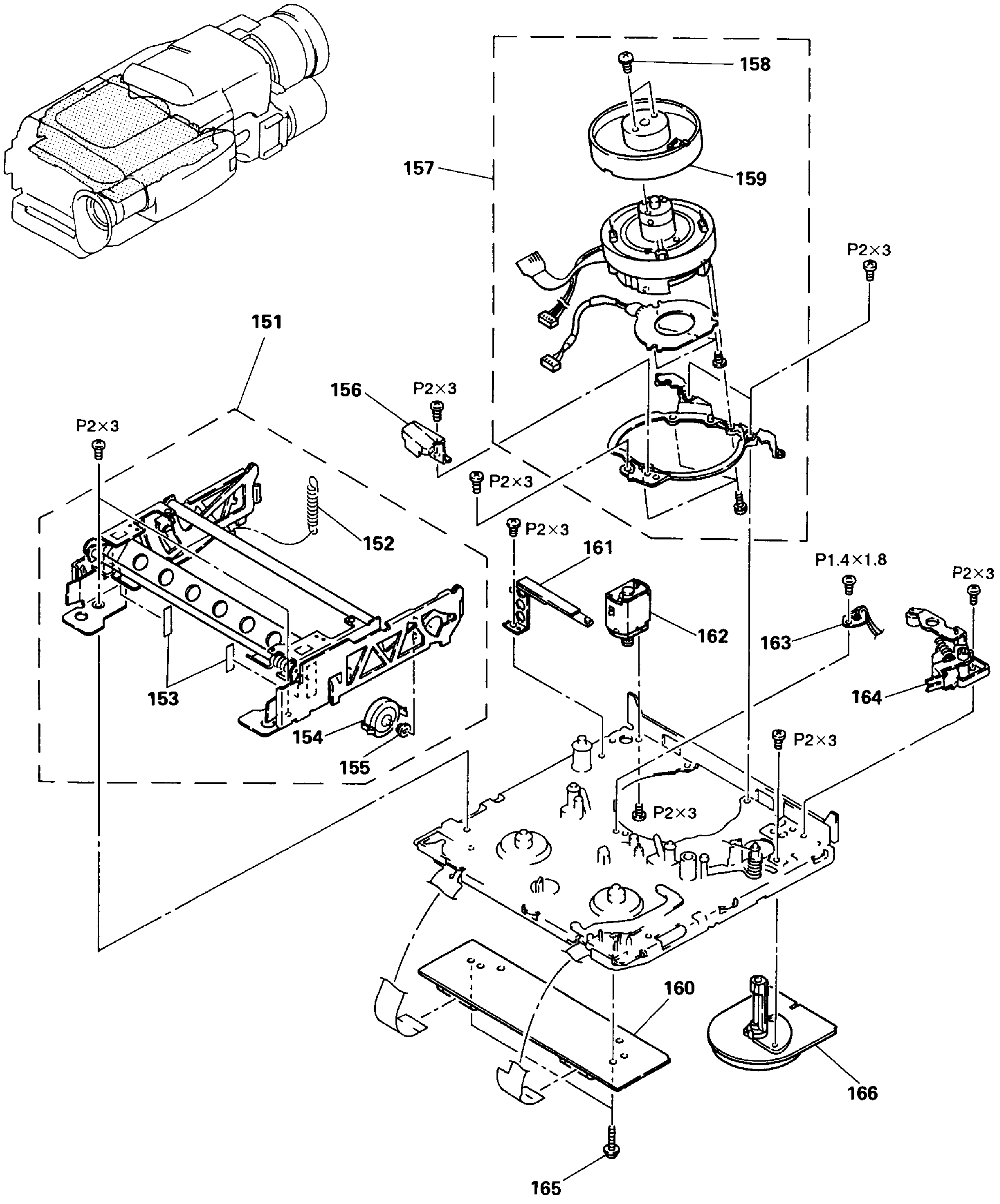
Be sure to read "Cautions for Replacement of CCD Imager" on page 83 when changing the CCD imager.


121
104
E, Australian Model
P2×4
105
106
107
110
P2×4
121
117
103
P2×4
not supplied
102
101
111
109
112
not supplied
121
121
P2×4
135
131
136
120
108
not supplied
134
130
not supplied
P2×3
133
120
P2×2
132
113
114
122
P2×4
not supplied
124
125
115
not supplied
126
119
118
123
121
116
not supplied
121
128
127
129

No.	Part No.	Description	Remark
101	*A-7061-957-A	CV-9 BOARD, COMPLETE (AEP, UK)	102, 103, 117
	*A-7062-054-A	CV-9 BOARD, COMPLETE (E, Australian)	102, 103, 117
102	A-7068-161-A	DT-79D (HIC) BOARD, COMPLETE (AEP(TYPE 1), E, Australian)	
	A-7068-162-A	DT-79A (HIC) BOARD, COMPLETE (AEP(TYPE 2), UK)	
103	A-7068-128-A	MX-7 (HIC) BOARD, COMPLETE	
104	3-719-695-01	SCREW (M1.7X3.5), SPECIAL HEAD	
105	1-568-409-11	JACK, PIN 2P (AUDIO/VIDEO IN) (E, Australian)	
106	1-537-142-11	TERMINAL BOARD	
107	*A-7061-955-A	PS-225P BOARD, COMPLETE	
108	3-719-408-01	SCREW (B2), TAPPING, P3	
109	*A-7061-599-A	CO-2P BOARD, COMPLETE (AEP, UK)	
	*A-7061-689-A	CO-2P BOARD, COMPLETE (E, Australian)	
110	*1-631-828-21	VK-3P BOARD	
111	*3-732-932-01	HOLDER, MD	
112	3-732-791-01	SCREW (M2X3)	
113	*1-631-827-21	KS-6P BOARD	
114	3-713-790-01	SCREW (M2X5), TAPPING, P3	
115	3-732-816-01	SCREW, STEP	

No.	Part No.	Description	Remark
116	A-7090-806-A	CAP ASSY, HOOD	
117	*A-7051-959-A	PJ-20 BOARD, COMPLETE	
118	3-728-269-01	HOOD	
119	1-547-380-11	LENS, ZOOM (VCL-8508XB)	
120	3-713-790-31	SCREW (M2X8), TAPPING, P3	
121	3-713-790-01	SCREW (M2X6), TAPPING, P3	
122	3-737-744-01	HOLDER (B), LENS	
123	*1-631-825-21	DK-4P BOARD	
124	3-738-519-01	SCREW (M2X3), +B	
125	X-3733-928-1	HOLDER ASSY, LENS	121
126	*A-7061-954-A	CK-19P BOARD, COMPLETE	123
127	1-575-064-11	CABLE, FLAT (1.0MM PITCH)18P	
128	*A-7061-606-A	LI-10 BOARD, COMPLETE	
129	1-550-104-32	HOLDER, BATTERY	
130	A-7090-879-A	FILTER BLOCK, OPTICAL (OFL-02-02)	
131	A-7091-132-A	IC ICX027BK-2 ASSY (CCD IMAGER)	
132	*3-725-180-01	SHEET, INSULATING, CCD HOLDER	
133	*A-7061-951-A	CD-17P BOARD, COMPLETE	
134	*X-3733-929-1	SHIELD (CD) ASSY, CAMERA	
135	3-303-961-11	WASHER, POLY	
136	3-335-640-51	SCREW (M2X16)	

5-5. MD BLOCK ASSEMBLY (1)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P2×3
P2×3
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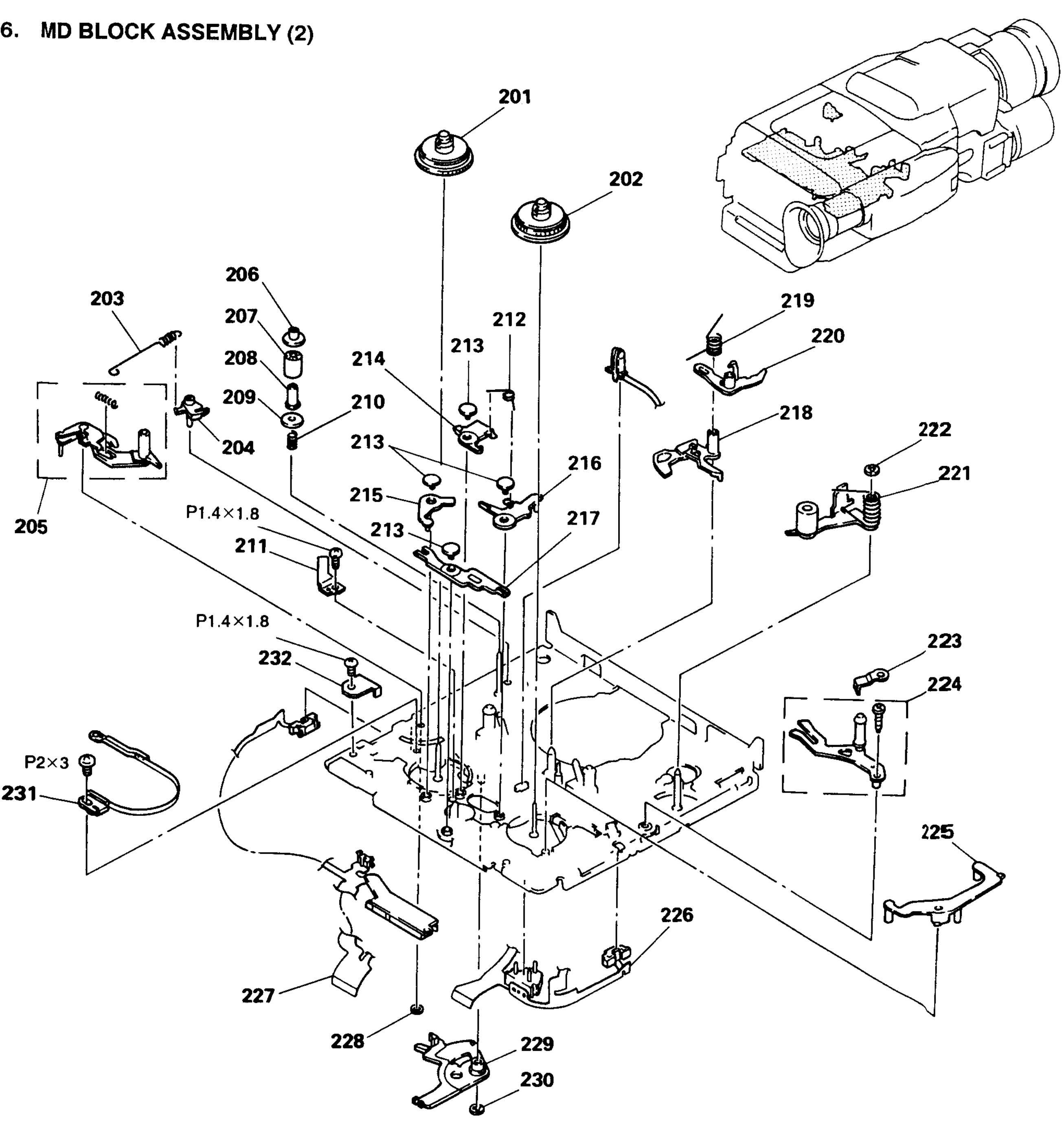
No.	Part No.	Description	Remark
151	X-3726-892-1	CASSETTE COMPARTMENT ASSY (N)	152-155
152	3-728-825-03	SPRING, TENSION	
153	*3-728-829-01	TAPE	
154	3-728-867-02	DAMPER, OIL	
155	3-728-828-02	GEAR, DAMPER	
156	3-728-868-01	GUARD, GUIDE	
157	A-7048-235-A	DRUM ASSY (DGU-42A-R)	158, 159
158	3-686-493-01	SCREW (M2X5), P1	
159	A-7049-215-A	DRUM ASSY UPPER, ROTARY (DGR-42R)	
160	*A-7061-953-A	CC-26P BOARD, COMPLETE	
161	1-535-739-12	TERMINAL, SHAFT EARTH	
162	A-7040-160-A	MOTOR ASSY, THREADING (M903)	
163	1-808-505-12	SENSOR (DEW)	
164	A-7040-161-B	ROLLER BLOCK ASSY, HC	
165	3-713-790-01	SCREW (M2X5), TAPPING, P3	
166	8-835-331-01	MOTOR, DC U-22A (CAPSTAN) (M902)	

5-6. MD BLOCK ASSEMBLY (2)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P1.4×1.8
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P2×3
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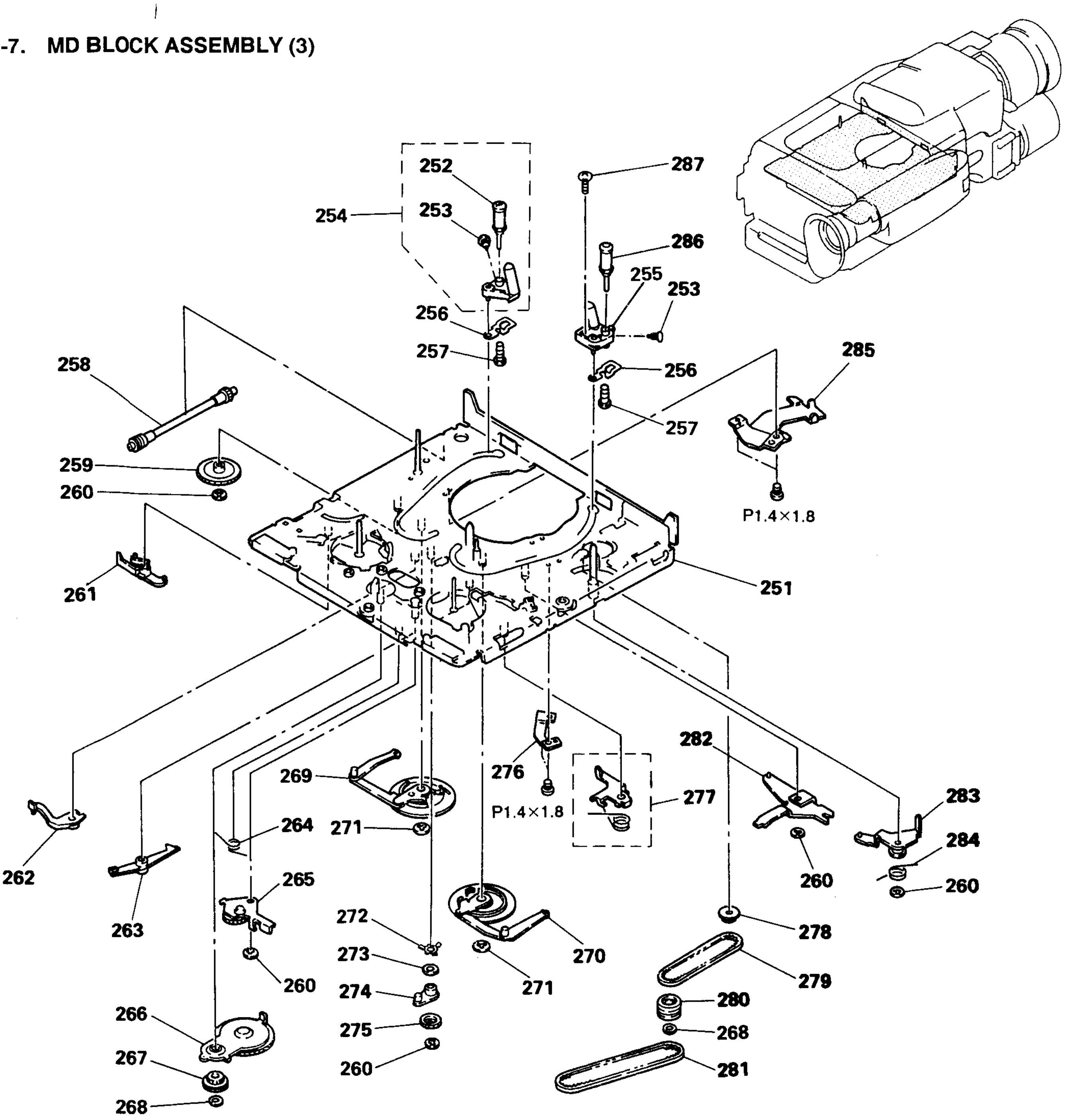
No.	Part No.	Description	Remark
201	X-3728-851-1	TABLE ASSY, REEL, S	
202	X-3728-854-1	TABLE ASSY, REEL, T	
203	3-736-414-01	SPRING, TENSION	
204	3-728-855-03	ARM, ADJUSTMENT	
205	X-3726-886-1	ARM ASSY (N), TENSION REGULATOR	
206	3-726-884-01	FLANGE, UPPER, TG2	
207	3-726-883-01	ROLLER, TG2	
208	3-726-885-01	SLEEVE, TG2	
209	3-726-882-02	FLANGE, LOWER, TG2	
210	3-726-886-01	SPRING, COMPRESSION	
211	3-726-848-01	RETAINER, TL	
212	3-726-866-01	SPRING (ST), TORSION	
213	3-726-858-01	PIN, SHAFT RETAINER	
214	3-728-849-01	BRAKE, S	
215	3-726-852-01	BRAKE, LB	
216	3-728-850-01	BRAKE, T	
217	3-726-853-01	LEVER, LB	
218	3-728-875-01	STOPPER, RK	
219	3-726-864-01	SPRING (RK), TORSION	
220	3-728-852-02	ARM, RK STOPPER	
221	A-7040-163-B	ARM BLOCK ASSY, PINCH	
222	3-669-465-00	WASHER (1.5), STOPPER	
223	3-728-808-01	SPRING, LEAF	
224	X-3726-822-1	ARM ASSY, TG7	
225	3-728-848-01	ARM, LB RELEASE	
226	1-628-061-12	FP-90 FLEXIBLE BOARD	
227	1-628-060-12	FP-89 FLEXIBLE BOARD	
228	3-321-393-11	WASHER, STOPPER	
229	X-3726-806-2	LEVER ASSY, SW	
230	3-726-829-01	WASHER, STOPPER	
231	X-3726-809-2	BAND ASSY, TENSION REGULATOR	
232	3-730-125-01	RETAINER, SW	

5-7. MD BLOCK ASSEMBLY (3)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P1.4×1.8
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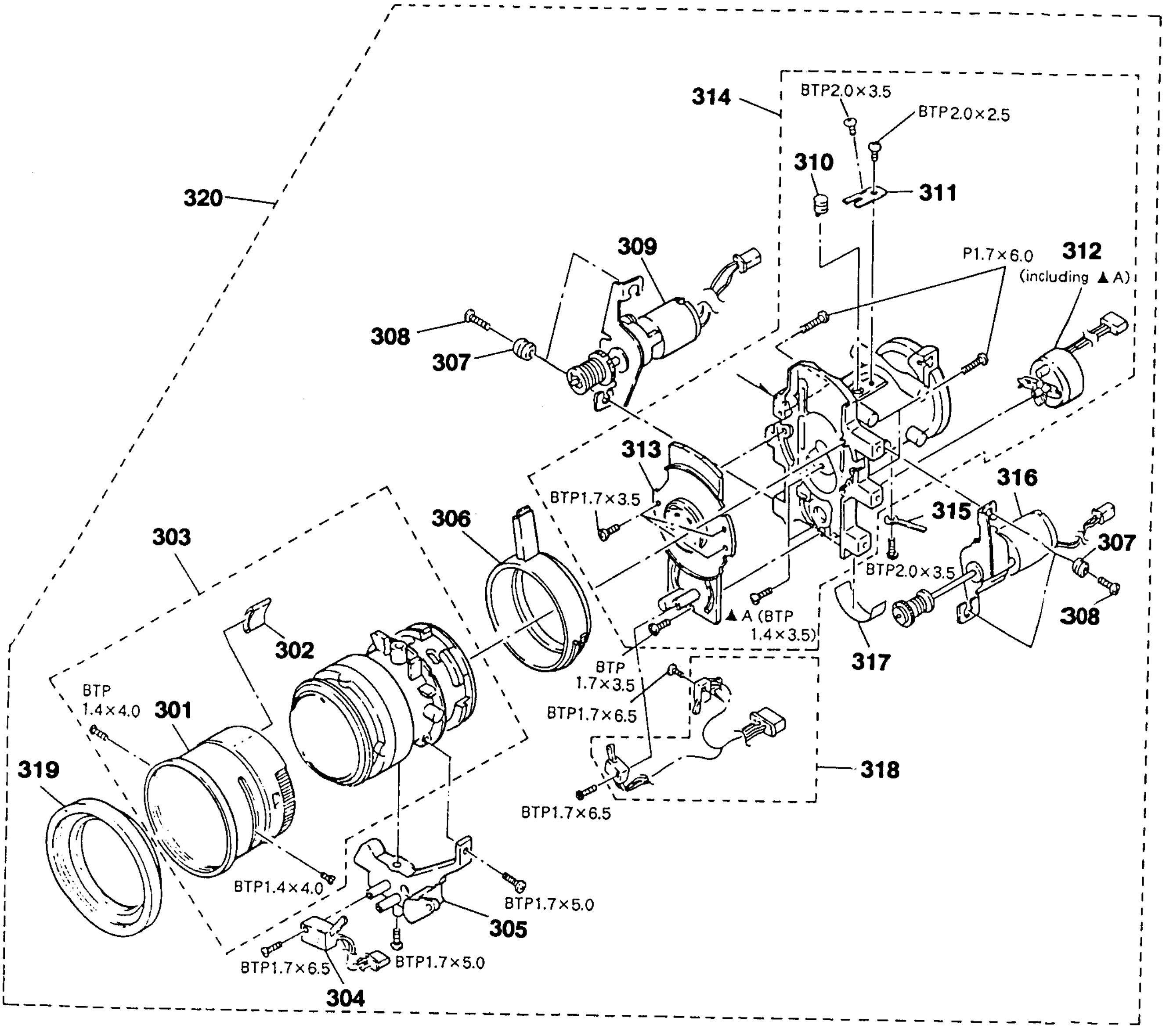
No.	Part No.	Description	Remark
251	*X-3728-801-1	CHASSIS ASSY, MECHANICAL	
252	X-3726-820-1	ROLLER ASSY (U), GUIDE	
253	3-726-822-01	SCREW (M1.4X2) (STEP), HEAD	
254	A-7040-128-A	COASTER (LEFT) BLOCK ASSY	252, 253
255	X-3728-853-1	COASTER (RIGHT) ASSY	
256	3-736-485-01	SPRING, LEAF, COSTER	
257	3-726-830-01	SCREW (M1.4X4) (THREE LOCK)	
258	X-3726-807-1	WORM ASSY	
259	3-726-826-01	GEAR, WHEEL	
260	3-726-829-01	WASHER, STOPPER	
261	3-728-842-01	LEVER, EJECT	
262	3-728-851-01	BRAKE, UL	
263	3-726-854-01	ARM, BRAKE RELEASE	
264	3-726-865-01	SPRING (LB), TORSION	
265	A-7040-130-A	GEAR BLOCK ASSY, LB	
266	X-3726-802-2	GEAR ASSY, RK	
267	X-3726-812-1	GEAR ASSY, RC	
268	3-321-393-11	WASHER, STOPPER	
269	X-3726-830-2	GEAR (LEFT) ASSY, DRIVE	
270	X-3726-831-2	GEAR (RIGHT) ASSY, DRIVE	
271	3-669-465-00	WASHER (1.5), STOPPER	
272	3-726-867-01	SPRING, LEAF	
273	3-701-436-21	WASHER, POLYEHTHYLENE	
274	3-726-857-02	ARM, UL	
275	3-726-856-02	GEAR, UL	
276	*3-726-805-01	REINFORCEMENT (TT)	
277	X-3726-808-2	BRAKE ASSY, TS	
278	X-3726-805-1	GEAR ASSY, JOINT	
279	3-728-866-11	BELT (S), TIMING	
280	X-3726-838-1	PULLEY (UPPER) ASSY, MIDWAY	
281	3-728-865-11	BELT (L), TIMING	
282	X-3728-846-1	LEVER ASSY, LOADING	
283	X-3726-824-1	ARM ASSY, PINCH SUB	
284	3-726-895-01	SPRING	
285	X-3726-841-1	REINFORCEMENT (SS) ASSY	
286	X-3728-810-1	ROLLER ASSY (U)(PLATING), GUIDE	
287	3-736-473-01	SCREW (M2X0.25) (THREE LOCK)	

5-8. LENS BLOCK ASSEMBLY


314
BTP2.0×3.5
BTP2.0×2.5
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309
P1.7×6.0
312
(including ▲A)
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313
BTP1.7×3.5
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307
BTP2.0×3.5
308
▲A (BTP 1.4×3.5)
302
317
BTP 1.7×3.5
BTP 1.4×4.0
301
BTP1.7×6.5
319
318
BTP1.7×6.5
BTP1.4×4.0
BTP1.7×5.0
305
BTP1.7×6.5
BTP1.7×5.0
304

No.	Part No.	Description	Remark
301	3-707-812-01	RING (F)	
302	3-707-801-01	RUBBER, STOPPER (F)	
303	3-707-808-01	TUBE ASSY	301, 302
304	3-707-805-01	SWITCH ASSY, AF	
305	3-707-806-01	BRACKET	
306	3-707-811-01	RING ASSY, ZOOM	
307	3-707-795-01	RUBBER, VIBRATION PROOF	
308	3-707-796-01	SCREW, FITTING (M)	
309	3-707-802-01	MOTOR ASSY, PZ GEAR (ZOOM)	
310	3-707-797-01	PIN	
311	3-707-798-01	CLAMP, PIN	
312	3-707-810-01	METER, IRIS (IRIS)	
313	3-707-809-01	FRAME ASSY, LENS	
314	3-707-807-01	TUBE ASSY, REAR	310-313
315	3-707-799-01	PLATE, LUG	
316	3-707-803-01	MOTOR ASSY, AF GEAR (FOCUS)	
317	3-707-800-01	TAPE	
318	3-707-804-01	PZ SWITCH ASSY	
319	3-707-568-01	ADAPTOR, LENS HOOD	
320	1-547-380-11	LENS, ZOOM (VCL-8508XB)	301-319

SECTION 6
ELECTRICAL PARTS LIST FP-89 FP-99 CO-2P

NOTE:

The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety.
Replace only with part number specified.

When indicating parts by reference number, please include the board name.

- Due to standardization, replacements in the parts list may be different from the parts specified in the diagrams or the components used on the set.
- −XX, −X mean standardized parts, so they may have some difference from the original one.
- RESISTORS
  All resistors are in ohms
  METAL : Metal-film resistor
  METAL OXIDE : Metal Oxide-film resistor
  F : nonflammable
- Items marked "*" are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.
- SEMICONDUCTORS
  In each case, U : μ, for example:
  UA...: μA..., UPA...: μPA...,
  UPB...: μPB..., UPC...: μPC...,
  UPD...: μPD...
- CAPACITORS
  MF : μF, PF : μμF
- COILS
  MMH : mH, UH : μH

Ref.No	Part No.	Description		Remark
	1-628-060-12	FP-89 FLEXIBLE BOARD (Ref.No 6,000 Series) *********************		
	1-572-253-11	SWITCH, SLIDE (ENCODER)		
	3-728-869-02	HOLDER, SENSOR		
		DIODE		
D301	8-719-820-44	PHOTO COUPLER TLP907-0		
		TRANSISTOR		
Q301	8-729-906-48	TRANSISTOR EE-TP109		

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Ref.No	Part No.	Description		Remark
	1-628-061-12	FP-90 FLEXIBLE BOARD (Ref.No 8,000 Series) *********************		
	3-728-837-01	HOLDER, LED		
	3-728-869-02	HOLDER, SENSOR		
		DIODE		
D302	8-719-940-81	DIODE GL452S		
D303	8-719-820-44	PHOTO COUPLER TLP907-0		
		TRANSISTOR		
Q302	8-729-906-48	TRANSISTOR EE-TP109		
		SWITCH		
S302	1-571-680-11	SWITCH, PUSH (3 KEY) (REC PROOF/TAPE SELECT)		

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Ref.No	Part No.	Description		Remark
	*A-7061-599-A	CO-2P BOARD, COMPLETE (Ref.No 6,000 Series) ********************** (AEP, UK MODEL)		
	*A-7061-689-A	CO-2P BOARD, COMPLETE (Ref.No 6,000 Series) ********************** (Australian, E MODEL)		
		CAPACITOR		
C101	1-164-247-11	CERAMIC CHIP 0.047MF	10%	16V
C102	1-164-247-11	CERAMIC CHIP 0.047MF	10%	16V
C103	1-164-247-11	CERAMIC CHIP 0.047MF	10%	16V
C104	1-163-038-00	CERAMIC CHIP 0.1MF		25V
C105	1-163-109-00	CERAMIC CHIP 47PF	5%	50V
C106	1-164-232-11	CERAMIC CHIP 0.01MF	10%	50V
C107	1-164-247-11	CERAMIC CHIP 0.047MF	10%	16V
C108	1-163-123-00	CERAMIC CHIP 180PF	5%	50V
C109	1-164-161-11	CERAMIC CHIP 0.0022MF	10%	50V
C110	1-124-778-00	ELECT CHIP 22MF	20%	6.3V
C111	1-164-232-11	CERAMIC CHIP 0.01MF	10%	50V
C112	1-164-247-11	CERAMIC CHIP 0.047MF	10%	16V
C113	1-164-004-11	CERAMIC CHIP 0.1MF	10%	25V
C114	1-164-004-11	CERAMIC CHIP 0.1MF	10%	25V
C115	1-164-004-11	CERAMIC CHIP 0.1MF	10%	25V
C116	1-164-004-11	CERAMIC CHIP 0.1MF	10%	25V
C117	1-164-247-11	CERAMIC CHIP 0.047MF	10%	16V
C118	1-164-232-11	CERAMIC CHIP 0.01MF	10%	50V
C119	1-124-778-00	ELECT CHIP 22MF	20%	6.3V
C123	1-164-247-11	CERAMIC CHIP 0.047MF	10%	16V
C124	1-164-232-11	CERAMIC CHIP 0.01MF	10%	50V
C125	1-163-037-11	CERAMIC CHIP 0.022MF	10%	25V
C126	1-164-232-11	CERAMIC CHIP 0.01MF	10%	50V
C131	1-163-117-00	CERAMIC CHIP 100PF	5%	50V
C132	1-163-121-00	CERAMIC CHIP 150PF	5%	50V
C133	1-163-117-00	CERAMIC CHIP 100PF	5%	50V
C134	1-163-117-00	CERAMIC CHIP 100PF	5%	50V
C135	1-163-038-00	CERAMIC CHIP 0.1MF		25V
C136	1-164-247-11	CERAMIC CHIP 0.047MF	10%	16V
C138	1-164-247-11	CERAMIC CHIP 0.047MF	10%	16V
C139	1-164-247-11	CERAMIC CHIP 0.047MF	10%	16V
C140	1-164-247-11	CERAMIC CHIP 0.047MF	10%	16V
C141	1-163-009-11	CERAMIC CHIP 0.001MF	10%	50V
C142	1-164-247-11	CERAMIC CHIP 0.047MF	10%	16V
C145	1-124-778-00	ELECT CHIP 22MF	20%	6.3V
C148	1-163-007-11	CERAMIC CHIP 680PF	10%	50V
C149	1-164-247-11	CERAMIC CHIP 0.047MF	10%	16V
C160	1-124-778-00	ELECT CHIP 22MF	20%	6.3V
C161	1-126-204-11	ELECT CHIP 47MF	20%	16V
C162	1-163-133-00	CERAMIC CHIP 470PF	5%	50V
C163	1-164-247-11	CERAMIC CHIP 0.047MF	10%	16V
C165	1-124-778-00	ELECT CHIP 22MF	20%	6.3V
C166	1-163-038-00	CERAMIC CHIP 0.1MF		25V
C401	1-126-601-11	ELECT CHIP 2.2MF	20%	50V
C403	1-126-206-11	ELECT CHIP 100MF	20%	6.3V
C404	1-126-206-11	ELECT CHIP 100MF	20%	6.3V
C405	1-126-603-11	ELECT CHIP 4.7MF	20%	35V
C406	1-164-232-11	CERAMIC CHIP 0.01MF	10%	50V
C407	1-163-009-11	CERAMIC CHIP 0.001MF	10%	50V
C408	1-162-638-11	CERAMIC CHIP 1MF		16V
C409	1-126-206-11	ELECT CHIP 100MF	20%	6.3V
C410	1-126-207-11	ELECT CHIP 33MF	20%	4V
C411	1-126-207-11	ELECT CHIP 33MF	20%	4V
C412	1-162-638-11	CERAMIC CHIP 1MF	16V	(Australian, E)
C413	1-162-638-11	CERAMIC CHIP 1MF		16V
C414	1-126-205-11	ELECT CHIP 47MF	20%	6.3V
C415	1-163-017-00	CERAMIC CHIP 0.0047MF	10%	50V
C416	1-163-019-00	CERAMIC CHIP 0.0068MF	10%	50V
C417	1-163-017-00	CERAMIC CHIP 0.0047MF	10%	50V
C418	1-126-206-11	ELECT CHIP 100MF	20%	6.3V
C420	1-162-638-11	CERAMIC CHIP 1MF		16V
C421	1-163-009-11	CERAMIC CHIP 0.001MF	10%	50V
C501	1-124-779-00	ELECT CHIP 10MF	20%	16V
C503	1-163-095-00	CERAMIC CHIP 12PF	5%	50V
C504	1-163-095-00	CERAMIC CHIP 12PF	5%	50V
C505	1-163-038-00	CERAMIC CHIP 0.1MF		25V

CO-2P

Ref.No	Part No.	Description		Remark
C506	1-163-038-00	CERAMIC CHIP 0.1MF		25V
C507	1-163-038-00	CERAMIC CHIP 0.1MF		25V
C508	1-124-779-00	ELECT CHIP 10MF	20%	16V
C509	1-163-038-00	CERAMIC CHIP 0.1MF		25V
C510	1-124-779-00	ELECT CHIP 10MF	20%	16V
C511	1-124-779-00	ELECT CHIP 10MF	20%	16V
C512	1-126-204-11	ELECT CHIP 47MF	20%	16V
C513	1-164-247-11	CERAMIC CHIP 0.047MF	10%	16V
C514	1-136-718-11	FILM CHIP 0.1MF	5%	25V
C515	1-164-232-11	CERAMIC CHIP 0.01MF	10%	50V
C516	1-124-779-00	ELECT CHIP 10MF	20%	16V
C517	1-163-077-00	CERAMIC CHIP 0.1MF		50V
C518	1-126-601-11	ELECT CHIP 2.2MF	20%	50V
C519	1-124-779-00	ELECT CHIP 10MF	20%	16V
C520	1-124-779-00	ELECT CHIP 10MF	20%	16V
C521	1-126-193-11	ELECT CHIP 1MF	20%	50V
C522	1-126-193-11	ELECT CHIP 1MF	20%	50V
C523	1-124-779-00	ELECT CHIP 10MF	20%	16V
C524	1-126-193-11	ELECT CHIP 1MF	20%	50V
C525	1-124-779-00	ELECT CHIP 10MF	20%	16V
C526	1-126-204-11	ELECT CHIP 47MF	20%	16V
C527	1-127-506-81	ELECT(SOLID) 1MF	20%	25V
C528	1-126-602-11	ELECT CHIP 3.3MF	20%	50V
C529	1-124-779-00	ELECT CHIP 10MF	20%	16V
C530	1-163-077-00	CERAMIC CHIP 0.1MF	10%	25V
C531	1-163-077-00	CERAMIC CHIP 0.1MF	10%	25V
C532	1-163-077-00	CERAMIC CHIP 0.1MF	10%	25V
C533	1-124-779-00	ELECT CHIP 10MF	20%	16V
C534	1-163-038-00	CERAMIC CHIP 0.1MF		25V
C535	1-124-779-00	ELECT CHIP 10MF	20%	16V
C536	1-163-038-00	CERAMIC CHIP 0.1MF		25V
C537	1-163-009-11	CERAMIC CHIP 0.001MF	10%	50V
C538	1-163-009-11	CERAMIC CHIP 0.001MF	10%	50V
C539	1-163-037-11	CERAMIC CHIP 0.022MF	10%	25V
C540	1-163-037-11	CERAMIC CHIP 0.022MF	10%	25V
C541	1-163-105-00	CERAMIC CHIP 33PF	5%	50V
C542	1-163-105-00	CERAMIC CHIP 33PF	5%	50V
C543	1-164-232-11	CERAMIC CHIP 0.01MF	10%	50V
C544	1-162-638-11	CERAMIC CHIP 1MF		16V
C545	1-162-638-11	CERAMIC CHIP 1MF		16V
C546	1-164-232-11	CERAMIC CHIP 0.01MF	10%	50V
C548	1-163-035-00	CERAMIC CHIP 0.047MF		50V
C549	1-163-081-00	CERAMIC CHIP 0.22MF		25V
C550	1-164-161-11	CERAMIC CHIP 0.0022MF		50V
C551	1-163-023-00	CERAMIC CHIP 0.015MF		50V
C552	1-162-638-11	CERAMIC CHIP 1MF		16V
C553	1-163-133-00	CERAMIC CHIP 470PF	5%	50V
C554	1-164-232-11	CERAMIC CHIP 0.01MF		50V
C555	1-163-125-00	CERAMIC CHIP 220PF	10%	50V
C556	1-163-017-00	CERAMIC CHIP 0.0047MF	10%	50V
C557	1-163-141-00	CERAMIC CHIP 0.001MF	5%	50V
C558	1-164-182-11	CERAMIC CHIP 0.0033MF	10%	50V
C559	1-164-247-11	CERAMIC CHIP 0.047MF	10%	16V

Ref.No	Part No.	Description		Remark
C560	1-162-638-11	CERAMIC CHIP 1MF		16V
C561	1-163-135-00	CERAMIC CHIP 560PF	5%	50V
C562	1-163-109-00	CERAMIC CHIP 47PF	5%	50V
C563	1-163-011-11	CERAMIC CHIP 0.0015MF	10%	50V
C564	1-163-101-00	CERAMIC CHIP 22PF	5%	50V
C565	1-164-247-11	CERAMIC CHIP 0.047MF	10%	16V
C566	1-163-038-00	CERAMIC CHIP 0.1MF		25V
C567	1-164-005-11	CERAMIC CHIP 000004700MF		25V
C570	1-164-004-11	CERAMIC CHIP 0.1MF	10%	25V
C573	1-164-247-11	CERAMIC CHIP 0.047MF	10%	16V
C574	1-162-638-11	CERAMIC CHIP 1MF		16V
C576	1-162-638-11	CERAMIC CHIP 1MF		16V
C577	1-164-004-11	CERAMIC CHIP 0.1MF	10%	25V
C578	1-163-141-00	CERAMIC CHIP 0.001MF	5%	50V
C579	1-163-019-00	CERAMIC CHIP 0.0068MF	10%	50V
C580	1-162-638-11	CERAMIC CHIP 1MF		16V
C581	1-135-092-21	TANTAL. CHIP 3.3MF	20%	16V
C582	1-163-019-00	CERAMIC CHIP 0.0068MF	10%	50V
C590	1-164-161-11	CERAMIC CHIP 0.0022MF	10%	50V
C591	1-164-161-11	CERAMIC CHIP 0.0022MF	10%	50V
C617	1-163-009-11	CERAMIC CHIP 0.001MF	10%	50V
C621	1-163-038-00	CERAMIC CHIP 0.1MF		25V
C622	1-163-123-00	CERAMIC CHIP 180PF	5%	50V
C623	1-163-038-00	CERAMIC CHIP 0.1MF		25V
C624	1-163-101-00	CERAMIC CHIP 22PF	5%	50V
C625	1-163-101-00	CERAMIC CHIP 22PF	5%	50V
C626	1-127-489-81	ELECT(SOLID) 10MF	20%	10V
C627	1-124-638-11	ELECT 22MF	20%	10V
C628	1-163-095-00	CERAMIC CHIP 12PF	5%	50V
C629	1-163-101-00	CERAMIC CHIP 22PF	5%	50V
C630	1-127-489-81	ELECT(SOLID) 10MF	20%	10V
C631	1-163-038-00	CERAMIC CHIP 0.1MF		25V
C632	1-164-247-11	CERAMIC CHIP 0.047MF	10%	16V
C633	1-135-149-21	TANTAL. CHIP 2.2MF	20%	6.3V

CONNECTOR

CN101	1-566-529-11	CONNECTOR, FPC (ZIF) 13P
CN102	*1-566-184-11	PIN, CONNECTOR (PC BOARD) 5P
CN501	1-566-529-11	CONNECTOR, FPC (ZIF) 13P
CN502	1-566-531-11	CONNECTOR, FPC (ZIF) 15P
CN503	1-565-529-21	PIN, CONNECTOR (PC BOARD) 4P
CN504	1-565-529-21	PIN, CONNECTOR (PC BOARD) 4P
CN505	*1-565-541-11	PIN, CONNECTOR (PC BOARD) 2P
CN506	1-565-527-11	PIN, CONNECTOR (PC BOARD) 2P
CN507	1-566-528-11	CONNECTOR, FPC (ZIF) 12P

DIODE

D401	8-719-106-09	DIODE RD6.2M-B3
D504	8-719-400-18	DIODE MA152WK
D505	8-719-400-18	DIODE MA152WK
D621	8-719-938-75	DIODE SB05-05CP
D622	8-719-938-75	DIODE SB05-05CP
D623	8-719-104-34	DIODE 1S2836

When indicating parts by reference number, please include the board name.

Ref.No	Part No.	Description	Remark
		FILTER	
FL401	1-236-145-11	FILTER, BAND PASS	
		IC	
IC101	8-752-033-38	IC CXA1202R	
IC401	8-741-150-51	IC SBX1505-21	
IC501	8-752-811-52	IC CXP80116-624Q	
IC502	8-759-990-78	IC S-81350AG-REG	
IC503	8-759-974-21	IC S-8054ALRS-LN	
IC504	8-759-804-72	IC LB1631M	
IC505	8-759-100-94	IC UPC358G2	
IC506	8-759-107-68	IC CX20115A	
IC507	8-759-202-45	IC CX20114	
IC508	8-759-805-06	IC CXA1127M	
IC509	8-759-209-53	IC CXA1204Q	
IC510	8-759-100-95	IC UPC324G2	
IC621	8-759-945-17	IC MB3775PF	
		COIL	
L101	1-408-777-00	INDUCTOR CHIP 10UH	
L102	1-412-033-11	INDUCTOR CHIP 220UH	
L103	1-412-029-11	INDUCTOR CHIP 10UH	
L104	1-412-033-11	INDUCTOR CHIP 220UH	
L105	1-412-033-11	INDUCTOR CHIP 220UH	
L106	1-412-033-11	INDUCTOR CHIP 220UH	
L107	1-412-033-11	INDUCTOR CHIP 220UH	
L501	1-412-031-11	INDUCTOR CHIP 47UH	
L502	1-412-031-11	INDUCTOR CHIP 47UH	
L503	1-408-795-21	INDUCTOR CHIP 330UH	
L504	1-412-032-11	INDUCTOR CHIP 100UH	
L505	1-412-030-11	INDUCTOR CHIP 22UH	
L506	1-412-032-11	INDUCTOR CHIP 100UH	
L621	1-410-690-11	COIL, CHOKE 22UH	
L622	1-410-626-11	COIL, CHOKE 47UH	
L623	1-410-626-11	COIL, CHOKE 47UH	
		IC LINK	
PS502⚠	1-532-605-00	LINK, IC ICP-N10	
PS503⚠	1-532-685-00	LINK, IC ICP-N20	
		TRANSISTOR	
Q102	8-729-100-66	TRANSISTOR 2SC1623	
Q108	8-729-901-06	TRANSISTOR DTA144EK	
Q109	8-729-100-66	TRANSISTOR 2SC1623	
Q110	8-729-100-66	TRANSISTOR 2SC1623	
Q112	8-729-119-76	TRANSISTOR 2SA1175-HFE	
Q113	8-729-902-21	TRANSISTOR 2SA1037K-T-146-R	
Q114	8-729-901-01	TRANSISTOR DTC144EK	
Q115	8-729-901-06	TRANSISTOR DTA144EK	
Q116	8-729-901-06	TRANSISTOR DTA144EK	
Q401	8-729-100-66	TRANSISTOR 2SC1623	

Ref.No	Part No.	Description	Remark
Q402	8-729-100-66	TRANSISTOR 2SC1623	
Q403	8-729-901-06	TRANSISTOR DTA144EK	
Q404	8-729-901-01	TRANSISTOR DTC144EK	
Q405	8-729-901-06	TRANSISTOR DTA144EK	
Q406	8-729-100-66	TRANSISTOR 2SC1623	
Q503	8-729-805-39	TRANSISTOR 2SC3898	
Q504	8-729-805-39	TRANSISTOR 2SC3898	
Q506	8-729-216-22	TRANSISTOR 2SA1162	
Q507	8-729-216-22	TRANSISTOR 2SA1162	
Q515	8-729-216-22	TRANSISTOR 2SA1162	
Q516	8-729-100-66	TRANSISTOR 2SC1623	
Q517	8-729-100-66	TRANSISTOR 2SC1623	
Q518	8-729-100-66	TRANSISTOR 2SC1623	
Q519	8-729-100-66	TRANSISTOR 2SC1623	
Q520	8-729-104-95	TRANSISTOR 2SB1040A-5	
Q521	8-729-100-66	TRANSISTOR 2SC1623	
Q522	8-729-216-22	TRANSISTOR 2SA1162	
Q524	8-729-100-66	TRANSISTOR 2SC1623	
Q525	8-729-100-66	TRANSISTOR 2SC1623	
Q526	8-729-216-22	TRANSISTOR 2SA1162	
Q527	8-729-100-66	TRANSISTOR 2SC1623	
Q528	8-729-216-22	TRANSISTOR 2SA1162	
Q529	8-729-100-66	TRANSISTOR 2SC1623	
Q530	8-729-216-22	TRANSISTOR 2SA1162	
Q531	8-729-216-22	TRANSISTOR 2SA1162	
Q532	8-729-216-22	TRANSISTOR 2SA1162	
Q533	8-729-216-22	TRANSISTOR 2SA1162	
Q534	8-729-901-01	TRANSISTOR DTC144EK	
Q535	8-729-901-01	TRANSISTOR DTC144EK	
Q536	8-729-805-39	TRANSISTOR 2SC3898	
Q537	8-729-216-22	TRANSISTOR 2SA1162	
Q538	8-729-100-66	TRANSISTOR 2SC1623	
Q539	8-729-100-66	TRANSISTOR 2SC1623	
Q540	8-729-100-66	TRANSISTOR 2SC1623	
Q621	8-729-901-00	TRANSISTOR DTC124EK	
Q622	8-729-100-67	TRANSISTOR 2SC1623-L7	
Q623	8-729-805-25	TRANSISTOR 2SB1121	
Q624	8-729-901-01	TRANSISTOR DTC144EK	
Q625	8-729-901-04	TRANSISTOR DTA114EK	
Q626	8-729-100-67	TRANSISTOR 2SC1623-L7	
Q627	8-729-805-25	TRANSISTOR 2SB1121	
Q628	8-729-100-66	TRANSISTOR 2SC1623	
Q629	8-729-100-66	TRANSISTOR 2SC1623	
		RESISTOR	
R102	1-216-101-00	METAL GLAZE 150K 5% 1/10W	
R103	1-216-041-00	METAL GLAZE 470 5% 1/10W	
R104	1-216-065-00	METAL GLAZE 4.7K 5% 1/10W	
R106	1-216-053-00	METAL GLAZE 1.5K 5% 1/10W	
R110	1-216-081-00	METAL GLAZE 22K 5% 1/10W	
R113	1-216-063-00	METAL GLAZE 3.9K 5% 1/10W	
R114	1-216-083-00	METAL GLAZE 27K 5% 1/10W	
R115	1-216-081-00	METAL GLAZE 22K 5% 1/10W	

The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety. Replace only with part number specified.

When indicating parts by reference number, please include the board name.

CO-2P

Ref.No	Part No.	Description				Remark
R116	1-216-085-00	METAL GLAZE	33K	5%	1/10W	
R117	1-216-085-00	METAL GLAZE	33K	5%	1/10W	
R118	1-216-081-00	METAL GLAZE	22K	5%	1/10W	
R119	1-216-083-00	METAL GLAZE	27K	5%	1/10W	
R120	1-216-085-00	METAL GLAZE	33K	5%	1/10W	
R121	1-216-077-00	METAL GLAZE	15K	5%	1/10W	
R122	1-216-051-00	METAL GLAZE	1.2K	5%	1/10W	
R123	1-216-081-00	METAL GLAZE	22K	5%	1/10W	
R124	1-216-013-00	METAL GLAZE	33	5%	1/10W	
R125	1-216-081-00	METAL GLAZE	22K	5%	1/10W	
R126	1-216-053-00	METAL GLAZE	1.5K	5%	1/10W	
R127	1-216-035-00	METAL GLAZE	270	5%	1/10W	
R128	1-216-047-00	METAL GLAZE	820	5%	1/10W	
R129	1-216-089-00	METAL GLAZE	47K	5%	1/10W	
R130	1-216-081-00	METAL GLAZE	22K	5%	1/10W	
R131	1-216-071-00	METAL GLAZE	8.2K	5%	1/10W	
R132	1-216-073-00	METAL GLAZE	10K	5%	1/10W	
R133	1-216-009-00	METAL GLAZE	22	5%	1/10W	
R134	1-216-037-00	METAL GLAZE	330	5%	1/10W	
R135	1-216-041-00	METAL GLAZE	470	5%	1/10W	
R136	1-216-081-00	METAL GLAZE	22K	5%	1/10W	
R137	1-216-081-00	METAL GLAZE	22K	5%	1/10W	
R139	1-216-043-00	METAL GLAZE	560	5%	1/10W	
R140	1-216-041-00	METAL GLAZE	470	5%	1/10W	
R141	1-216-097-00	METAL GLAZE	100K	5%	1/10W	
R143	1-216-095-00	METAL GLAZE	82K	5%	1/10W	
R150	1-216-089-00	METAL GLAZE	47K	5%	1/10W	
R151	1-216-101-00	METAL GLAZE	150K	5%	1/10W	
R155	1-216-059-00	METAL GLAZE	2.7K	5%	1/10W	
R156	1-216-041-00	METAL GLAZE	470	5%	1/10W	
R157	1-216-085-00	METAL GLAZE	33K	5%	1/10W	
R158	1-216-039-00	METAL GLAZE	390	5%	1/10W	
R160	1-216-059-00	METAL GLAZE	2.7K	5%	1/10W	
R161	1-216-013-00	METAL GLAZE	33	5%	1/10W	
R401	1-216-041-00	METAL GLAZE	470	5%	1/10W	
R402	1-216-073-00	METAL GLAZE	10K	5%	1/10W	
R403	1-216-073-00	METAL GLAZE	10K	5%	1/10W	
R404	1-216-053-00	METAL GLAZE	1.5K	5%	1/10W	
R405	1-216-081-00	METAL GLAZE	22K	5%	1/10W	
R407	1-216-081-00	METAL GLAZE	22K	5%	1/10W	
R408	1-216-081-00	METAL GLAZE	22K	5%	1/10W	
R409	1-216-121-00	METAL GLAZE	1M	5%	1/10W	
R410	1-216-011-00	METAL GLAZE	27	5%	1/10W	
R411	1-216-073-00	METAL GLAZE	10K	5%	1/10W	
R415	1-216-085-00	METAL GLAZE	33K	5%	1/10W	
R416	1-216-063-00	METAL GLAZE	3.9K	5%	1/10W	
R417	1-216-089-00	METAL GLAZE	47K	5%	1/10W	
R418	1-216-061-00	METAL GLAZE	3.3K	5%	1/10W	(Australian, E)
R419	1-216-057-00	METAL GLAZE	2.2K	5%	1/10W	(Australian, E)
R421	1-216-057-00	METAL GLAZE	2.2K	5%	1/10W	
R422	1-216-049-00	METAL GLAZE	1K	5%	1/10W	
R423	1-216-049-00	METAL GLAZE	1K	5%	1/10W	
R430	1-216-295-00	METAL GLAZE	0	5%	1/10W	
R431	1-216-295-00	METAL GLAZE	0	5%	1/10W	
R501	1-216-295-00	METAL GLAZE	0	5%	1/10W	
R502	1-216-097-00	METAL GLAZE	100K	5%	1/10W	
R503	1-216-073-00	METAL GLAZE	10K	5%	1/10W	
R504	1-216-097-00	METAL GLAZE	100K	5%	1/10W	
R505	1-216-073-00	METAL GLAZE	10K	5%	1/10W	
R506	1-216-097-00	METAL GLAZE	100K	5%	1/10W	
R507	1-216-073-00	METAL GLAZE	10K	5%	1/10W	
R508	1-216-097-00	METAL GLAZE	100K	5%	1/10W	
R509	1-216-073-00	METAL GLAZE	10K	5%	1/10W	
R510	1-216-097-00	METAL GLAZE	100K	5%	1/10W	
R511	1-216-073-00	METAL GLAZE	10K	5%	1/10W	
R512	1-216-097-00	METAL GLAZE	100K	5%	1/10W	
R513	1-216-073-00	METAL GLAZE	10K	5%	1/10W	
R514	1-216-097-00	METAL GLAZE	100K	5%	1/10W	
R515	1-216-073-00	METAL GLAZE	10K	5%	1/10W	
R516	1-216-073-00	METAL GLAZE	10K	5%	1/10W	
R517	1-216-073-00	METAL GLAZE	10K	5%	1/10W	
R518	1-216-097-00	METAL GLAZE	100K	5%	1/10W	
R519	1-216-073-00	METAL GLAZE	10K	5%	1/10W	
R520	1-216-097-00	METAL GLAZE	100K	5%	1/10W	
R521	1-216-073-00	METAL GLAZE	10K	5%	1/10W	
R522	1-216-097-00	METAL GLAZE	100K	5%	1/10W	
R523	1-216-073-00	METAL GLAZE	10K	5%	1/10W	
R524	1-216-097-00	METAL GLAZE	100K	5%	1/10W	
R525	1-216-691-11	METAL CHIP	47K	0.50%	1/10W	
R526	1-216-691-11	METAL CHIP	47K	0.50%	1/10W	
R528	1-216-117-00	METAL GLAZE	680K	5%	1/10W	
R530	1-216-077-00	METAL GLAZE	15K	5%	1/10W	
R531	1-216-049-00	METAL GLAZE	1K	5%	1/10W	
R532	1-216-069-00	METAL GLAZE	6.8K	5%	1/10W	
R533	1-216-109-00	METAL GLAZE	330K	5%	1/10W	
R534	1-216-085-00	METAL GLAZE	33K	5%	1/10W	
R535	1-216-121-00	METAL GLAZE	1M	5%	1/10W	
R536	1-216-075-00	METAL GLAZE	12K	5%	1/10W	
R537	1-216-085-00	METAL GLAZE	33K	5%	1/10W	
R538	1-216-077-00	METAL GLAZE	15K	5%	1/10W	
R539	1-216-121-00	METAL GLAZE	1M	5%	1/10W	
R540	1-216-097-00	METAL GLAZE	100K	5%	1/10W	
R541	1-216-089-00	METAL GLAZE	47K	5%	1/10W	
R542	1-216-097-00	METAL GLAZE	100K	5%	1/10W	
R543	1-216-073-00	METAL GLAZE	10K	5%	1/10W	
R544	1-216-097-00	METAL GLAZE	100K	5%	1/10W	
R545	1-216-113-00	METAL GLAZE	470K	5%	1/10W	
R546	1-216-089-00	METAL GLAZE	47K	5%	1/10W	
R547	1-216-097-00	METAL GLAZE	100K	5%	1/10W	
R548	1-216-073-00	METAL GLAZE	10K	5%	1/10W	
R549	1-216-097-00	METAL GLAZE	100K	5%	1/10W	
R550	1-216-113-00	METAL GLAZE	470K	5%	1/10W	
R551	1-216-049-00	METAL GLAZE	1K	5%	1/10W	
R552	1-216-105-00	METAL GLAZE	220K	5%	1/10W	

When indicating parts by reference number, please include the board name.

Ref.No	Part No.	Description				Remark
R553	1-216-106-00	METAL GLAZE	240K	5%	1/10W	
R554	1-216-182-00	METAL GLAZE	220	5%	1/8W	
R555	1-216-073-00	METAL GLAZE	10K	5%	1/10W	
R556	1-216-071-00	METAL GLAZE	8.2K	5%	1/10W	
R557	1-216-051-00	METAL GLAZE	1.2K	5%	1/10W	
R558	1-216-073-00	METAL GLAZE	10K	5%	1/10W	
R559	1-216-073-00	METAL GLAZE	10K	5%	1/10W	
R560	1-216-073-00	METAL GLAZE	10K	5%	1/10W	
R561	1-216-073-00	METAL GLAZE	10K	5%	1/10W	
R562	1-216-073-00	METAL GLAZE	10K	5%	1/10W	
R563	1-216-073-00	METAL GLAZE	10K	5%	1/10W	
R564	1-216-101-00	METAL GLAZE	150K	5%	1/10W	
R565	1-216-109-00	METAL GLAZE	330K	5%	1/10W	
R566	1-216-121-00	METAL GLAZE	1M	5%	1/10W	
R567	1-216-121-00	METAL GLAZE	1M	5%	1/10W	
R568	1-216-113-00	METAL GLAZE	470K	5%	1/10W	
R570	1-216-073-00	METAL GLAZE	10K	5%	1/10W	
R571	1-216-049-00	METAL GLAZE	1K	5%	1/10W	
R572	1-216-115-00	METAL GLAZE	560K	5%	1/10W	
R574	1-216-043-00	METAL GLAZE	560	5%	1/10W	
R575	1-216-101-00	METAL GLAZE	150K	5%	1/10W	
R576	1-216-085-00	METAL GLAZE	33K	5%	1/10W	
R577	1-216-081-00	METAL GLAZE	22K	5%	1/10W	
R578	1-216-081-00	METAL GLAZE	22K	5%	1/10W	
R579	1-216-025-00	METAL GLAZE	100	5%	1/10W	
R580	1-216-035-00	METAL GLAZE	270	5%	1/10W	
R581	1-216-077-00	METAL GLAZE	15K	5%	1/10W	
R582	1-216-298-00	METAL GLAZE	2.2	5%	1/10W	
R583	1-216-298-00	METAL GLAZE	2.2	5%	1/10W	
R584	1-216-298-00	METAL GLAZE	2.2	5%	1/10W	
R585	1-216-041-00	METAL GLAZE	470	5%	1/10W	
R586	1-216-041-00	METAL GLAZE	470	5%	1/10W	
R587	1-216-085-00	METAL GLAZE	33K	5%	1/10W	
R588	1-216-748-11	METAL GLAZE	39K	5%	1/10W	
R589	1-216-043-00	METAL GLAZE	560	5%	1/10W	
R590	1-216-035-00	METAL GLAZE	270	5%	1/10W	
R591	1-216-031-00	METAL GLAZE	180	5%	1/10W	
R592	1-216-061-00	METAL GLAZE	3.3K	5%	1/10W	
R593	1-216-071-00	METAL GLAZE	8.2K	5%	1/10W	
R594	1-216-061-00	METAL GLAZE	3.3K	5%	1/10W	
R595	1-216-061-00	METAL GLAZE	3.3K	5%	1/10W	
R596	1-216-061-00	METAL GLAZE	3.3K	5%	1/10W	
R597	1-216-065-00	METAL GLAZE	4.7K	5%	1/10W	
R598	1-216-061-00	METAL GLAZE	3.3K	5%	1/10W	
R599	1-216-065-00	METAL GLAZE	4.7K	5%	1/10W	
R600	1-216-121-00	METAL GLAZE	1M	5%	1/10W	
R601	1-216-047-00	METAL GLAZE	820	5%	1/10W	
R602	1-216-083-00	METAL GLAZE	27K	5%	1/10W	
R603	1-216-081-00	METAL GLAZE	22K	5%	1/10W	
R604	1-216-085-00	METAL GLAZE	33K	5%	1/10W	
R605	1-216-073-00	METAL GLAZE	10K	5%	1/10W	
R606	1-216-049-00	METAL GLAZE	1K	5%	1/10W	
R607	1-216-025-00	METAL GLAZE	100	5%	1/10W	

Ref.No	Part No.	Description				Remark
R608	1-216-027-00	METAL GLAZE	120	5%	1/10W	
R609	1-216-069-00	METAL GLAZE	6.8K	5%	1/10W	
R610	1-216-121-00	METAL GLAZE	1M	5%	1/10W	
R611	1-216-083-00	METAL GLAZE	27K	5%	1/10W	
R612	1-216-061-00	METAL GLAZE	3.3K	5%	1/10W	
R613	1-216-083-00	METAL GLAZE	27K	5%	1/10W	
R614	1-216-093-00	METAL GLAZE	68K	5%	1/10W	
R615	1-216-073-00	METAL GLAZE	10K	5%	1/10W	
R616	1-216-097-00	METAL GLAZE	100K	5%	1/10W	
R617	1-216-097-00	METAL GLAZE	100K	5%	1/10W	
R618	1-216-077-00	METAL GLAZE	15K	5%	1/10W	
R619	1-216-109-00	METAL GLAZE	330K	5%	1/10W	
R620	1-216-083-00	METAL GLAZE	27K	5%	1/10W	
R621	1-216-089-00	METAL GLAZE	47K	5%	1/10W	
R622	1-216-097-00	METAL GLAZE	100K	5%	1/10W	
R623	1-216-063-00	METAL GLAZE	3.9K	5%	1/10W	
R624	1-216-069-00	METAL GLAZE	6.8K	5%	1/10W	
R625	1-216-069-00	METAL GLAZE	6.8K	5%	1/10W	
R626	1-216-063-00	METAL GLAZE	3.9K	5%	1/10W	
R627	1-216-069-00	METAL GLAZE	6.8K	5%	1/10W	
R628	1-216-057-00	METAL GLAZE	2.2K	5%	1/10W	
R629	1-216-089-00	METAL GLAZE	47K	5%	1/10W	
R630	1-216-045-00	METAL GLAZE	680	5%	1/10W	
R631	1-216-067-00	METAL GLAZE	5.6K	5%	1/10W	
R632	1-216-055-00	METAL GLAZE	1.8K	5%	1/10W	
R633	1-216-073-00	METAL GLAZE	10K	5%	1/10W	
R634	1-216-033-00	METAL GLAZE	220	5%	1/10W	
R635	1-216-057-00	METAL GLAZE	2.2K	5%	1/10W	
R636	1-216-089-00	METAL GLAZE	47K	5%	1/10W	
R637	1-216-045-00	METAL GLAZE	680	5%	1/10W	
R638	1-216-067-00	METAL GLAZE	5.6K	5%	1/10W	
R639	1-216-055-00	METAL GLAZE	1.8K	5%	1/10W	
R640	1-216-097-00	METAL GLAZE	100K	5%	1/10W	
R641	1-216-136-00	METAL GLAZE	2.7	5%	1/8W	
R642	1-216-065-00	METAL GLAZE	4.7K	5%	1/10W	
R643	1-216-051-00	METAL GLAZE	1.2K	5%	1/10W	
R644	1-216-069-00	METAL GLAZE	6.8K	5%	1/10W	
R645	1-216-057-00	METAL GLAZE	2.2K	5%	1/10W	
R652	1-216-057-00	METAL GLAZE	2.2K	5%	1/10W	
R653	1-216-081-00	METAL GLAZE	22K	5%	1/10W	
R654	1-216-081-00	METAL GLAZE	22K	5%	1/10W	
R655	1-216-089-00	METAL GLAZE	47K	5%	1/10W	
R656	1-216-089-00	METAL GLAZE	47K	5%	1/10W	
R659	1-216-097-00	METAL GLAZE	100K	5%	1/10W	
R660	1-216-073-00	METAL GLAZE	10K	5%	1/10W	
R661	1-216-097-00	METAL GLAZE	100K	5%	1/10W	
R663	1-216-073-00	METAL GLAZE	10K	5%	1/10W	
R664	1-216-097-00	METAL GLAZE	100K	5%	1/10W	
R665	1-216-073-00	METAL GLAZE	10K	5%	1/10W	
R666	1-216-049-00	METAL GLAZE	1K	5%	1/10W	
R667	1-216-049-00	METAL GLAZE	1K	5%	1/10W	
R668	1-216-041-00	METAL GLAZE	470	5%	1/10W	
R669	1-216-049-00	METAL GLAZE	1K	5%	1/10W	

When indicating parts by reference number, please include the board name.

Ref.No	Part No.	Description	Remark
R670	1-216-057-00	METAL GLAZE 2.2K 5% 1/10W	
R681	1-216-097-00	METAL GLAZE 100K 5% 1/10W	

VARIABLE RESISTOR

Ref.No	Part No.	Description	Remark
RV101	1-230-873-11	RES, ADJ, METAL GLAZE 47K	
RV102	1-230-873-11	RES, ADJ, METAL GLAZE 47K	
RV501	1-230-874-11	RES, ADJ, METAL GLAZE 100K	
RV551	1-238-225-11	RES, ADJ, METAL GLAZE 47K	
RV621	1-230-869-11	RES, ADJ, METAL GLAZE 4.7K	

CONNECTOR

Ref.No	Part No.	Description	Remark
W501	1-574-451-11	CABLE, FLAT (1.0MM PITCH) 22P	
W502	1-574-451-11	CABLE, FLAT (1.0MM PITCH) 22P	

CRYSTAL

Ref.No	Part No.	Description	Remark
X501	1-577-116-11	VIBRATOR, CRYSTAL (16MHz)	
X502	1-567-699-11	VIBRATOR, CRYSTAL (5.9MHz)	

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*A-7061-606-A LI-10 BOARD, COMPLETE (Ref.No 3,000 Series)
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CAPACITOR

Ref.No	Part No.	Description	Remark
C901	1-163-115-00	CERAMIC CHIP 82PF 5% 50V	
C902	1-163-125-00	CERAMIC CHIP 220PF 5% 50V	
C903	1-163-095-00	CERAMIC CHIP 12PF 5% 50V	
C904	1-124-778-00	ELECT CHIP 22MF 20% 6.3V	
C905	1-164-232-11	CERAMIC CHIP 0.01MF 50V	
C907	1-162-638-11	CERAMIC CHIP 1MF 16V	
C908	1-164-232-11	CERAMIC CHIP 0.01MF 50V	
C910	1-163-009-11	CERAMIC CHIP 0.001MF 10% 50V	
C911	1-164-232-11	CERAMIC CHIP 0.01MF 10% 50V	
C912	1-164-232-11	CERAMIC CHIP 0.01MF 10% 50V	
C914	1-163-091-00	CERAMIC CHIP 8PF 0.25PF 50V	
C916	1-162-638-11	CERAMIC CHIP 1MF 16V	
C918	1-162-638-11	CERAMIC CHIP 1MF 16V	

TRIMMER

Ref.No	Part No.	Description	Remark
CV901	1-141-368-11	CAP, CHIP TRIMMER (30P)	

DIODE

Ref.No	Part No.	Description	Remark
D901	8-713-300-88	DIODE 1T33C-01	

IC

Ref.No	Part No.	Description	Remark
IC901	8-759-101-12	IC UPC311G2	
IC902	8-759-983-54	IC MB87485	
IC903	8-759-945-09	IC MB8464-12LLPF	

COIL

Ref.No	Part No.	Description	Remark
L901	1-410-377-31	INDUCTOR CHIP 4.7UH	
L902	1-410-384-31	INDUCTOR CHIP 18UH	
L903	1-410-369-11	INDUCTOR CHIP 1UH	
L904	1-410-377-31	INDUCTOR CHIP 4.7UH	

TRANSISTOR

Ref.No	Part No.	Description	Remark
Q901	8-729-100-66	TRANSISTOR 2SC1623	
Q902	8-729-100-66	TRANSISTOR 2SC1623	
Q903	8-729-216-22	TRANSISTOR 2SA1162	
Q904	8-729-901-01	TRANSISTOR DTC144EK	

RESISTOR

Ref.No	Part No.	Description	Remark
R901	1-216-049-00	METAL GLAZE 1K 5% 1/10W	
R902	1-216-049-00	METAL GLAZE 1K 5% 1/10W	
R903	1-216-049-00	METAL GLAZE 1K 5% 1/10W	
R904	1-216-055-00	METAL GLAZE 1.8K 5% 1/10W	
R905	1-216-089-00	METAL GLAZE 47K 5% 1/10W	
R906	1-216-061-00	METAL GLAZE 3.3K 5% 1/10W	
R907	1-216-065-00	METAL GLAZE 4.7K 5% 1/10W	
R908	1-216-063-00	METAL GLAZE 3.9K 5% 1/10W	
R909	1-216-049-00	METAL GLAZE 1K 5% 1/10W	
R910	1-216-057-00	METAL GLAZE 2.2K 5% 1/10W	
R911	1-216-049-00	METAL GLAZE 1K 5% 1/10W	
R912	1-216-057-00	METAL GLAZE 2.2K 5% 1/10W	
R913	1-216-073-00	METAL GLAZE 10K 5% 1/10W	
R914	1-216-073-00	METAL GLAZE 10K 5% 1/10W	
R915	1-216-097-00	METAL GLAZE 100K 5% 1/10W	
R916	1-216-065-00	METAL GLAZE 4.7K 5% 1/10W	
R917	1-216-073-00	METAL GLAZE 10K 5% 1/10W	
R918	1-216-097-00	METAL GLAZE 100K 5% 1/10W	
R940	1-216-081-00	METAL GLAZE 22K 5% 1/10W	
R941	1-216-067-00	METAL GLAZE 5.6K 5% 1/10W	
R942	1-216-037-00	METAL GLAZE 330 5% 1/10W	

CONNECTOR

Ref.No	Part No.	Description	Remark
W802	1-574-471-11	CABLE, FLAT (1.0MM PITCH) 23P	

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*A-7061-609-A VF-14P BOARD, COMPLETE (Ref.No 7,000 Series)
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*3-674-372-00 HOLDER (A), LED

CAPACITOR

Ref.No	Part No.	Description	Remark
C901	1-124-442-00	ELECT 330MF 20% 6.3V	
C903	1-163-077-00	CERAMIC CHIP 0.1MF 50V	
C904	1-126-160-11	ELECT 1MF 20% 50V	
C905	1-163-037-11	CERAMIC CHIP 0.022MF 10% 25V	
C906	1-131-387-41	TANTALUM 47MF 10% 6.3V	
C907	1-162-638-11	CERAMIC CHIP 1MF 16V	
C908	1-136-165-00	FILM 0.1MF 5% 50V	
C909	1-163-105-00	CERAMIC CHIP 33PF 5% 50V	
C910	1-124-587-11	ELECT 220MF 20% 6.3V	
C911	1-163-141-00	CERAMIC CHIP 0.001MF 5% 50V	
C912 ⚠	1-162-625-11	CERAMIC CHIP 0.0047MF 5% 50V	

The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety.
Replace only with part number specified.

When indicating parts by reference number, please include the board name.

Ref.No	Part No.	Description			Remark
C913	⚠1-162-625-11	CERAMIC CHIP	0.0047MF	5%	50V
C914	⚠1-163-209-00	CERAMIC CHIP	0.0015MF	5%	50V
C915	1-126-090-11	ELECT	82MF	20%	10V
C916	1-126-094-11	ELECT	4.7MF	20%	35V
C918	1-163-037-11	CERAMIC CHIP	0.022MF	10%	25V
C919	1-102-038-00	CERAMIC	0.001MF		500V

CONNECTOR

Ref.No	Part No.	Description
CN902	*1-566-195-11	PIN, CONNECTOR (PC BOARD) 2P
CN903	*1-566-195-21	PIN, CONNECTOR (PC BOARD) 2P
CN904	*1-566-759-11	PIN, CONNECTOR (PC BOARD) 4P

DIODE

Ref.No	Part No.	Description
D903	8-719-400-20	DIODE MA152WA

IC

Ref.No	Part No.	Description
IC901	8-759-420-01	IC AN2512S

COIL

Ref.No	Part No.	Description	
L901	1-410-831-21	INDUCTOR	82UH
L902	1-408-976-21	INDUCTOR	33UH
L903	⚠1-459-876-21	COIL, FERRITE (HLC)	

TRANSISTOR

Ref.No	Part No.	Description
Q903	8-729-216-31	TRANSISTOR 2SA1163G
Q904	8-729-100-66	TRANSISTOR 2SC1623
Q905	⚠8-729-106-68	TRANSISTOR 2SD1615A-GP

RESISTOR

Ref.No	Part No.	Description			Remark
R903	1-216-041-00	METAL GLAZE	470	5%	1/10W
R905	1-216-007-00	METAL GLAZE	18	5%	1/10W
R906	1-216-121-00	METAL GLAZE	1M	5%	1/10W
R908	1-216-097-00	METAL GLAZE	100K	5%	1/10W
R909	1-216-113-00	METAL GLAZE	470K	5%	1/10W
R910	1-216-053-00	METAL GLAZE	1.5K	5%	1/10W
R911	1-216-013-00	METAL GLAZE	33	5%	1/10W
R912	1-216-691-11	METAL CHIP	47K	0.50%	1/10W
R913	1-216-107-00	METAL GLAZE	270K	1%	1/10W
R914	1-216-025-00	METAL GLAZE	100	5%	1/10W
R915	1-216-306-11	METAL GLAZE	3.9	5%	1/10W
R917	1-216-047-00	METAL GLAZE	820	5%	1/10W
R918	1-216-069-00	METAL GLAZE	6.8K	5%	1/10W
R919	1-216-748-11	METAL GLAZE	39K	5%	1/10W
R920	1-216-748-11	METAL GLAZE	39K	5%	1/10W
R921	1-216-053-00	METAL GLAZE	1.5K	5%	1/10W
R922	1-216-101-00	METAL GLAZE	150K	5%	1/10W
R923	1-216-121-00	METAL GLAZE	1M	5%	1/10W
R924	1-216-131-11	METAL GLAZE	2.7M	5%	1/10W
R925	1-216-131-11	METAL GLAZE	2.7M	5%	1/10W
R926	1-216-055-00	METAL GLAZE	1.8K	5%	1/10W
R927	1-216-061-00	METAL GLAZE	3.3K	5%	1/10W
R928	1-216-051-00	METAL GLAZE	1.2K	5%	1/10W
R929	1-216-047-00	METAL GLAZE	820	5%	1/10W
R930	1-216-041-00	METAL GLAZE	470	5%	1/10W
R931	1-216-041-00	METAL GLAZE	470	5%	1/10W
R932	1-216-047-00	METAL GLAZE	820	5%	1/10W
R933	1-216-121-00	METAL GLAZE	1M	5%	1/10W

VARIABLE RESISTOR

Ref.No	Part No.	Description
RV901	1-230-873-11	RES, ADJ, METAL GLAZE 47K
RV902	1-230-866-11	RES, ADJ, METAL GLAZE 470
RV904	1-228-762-00	RES, ADJ, METAL GLAZE 1M

TRANSFORMER

Ref.No	Part No.	Description
T901	⚠1-439-431-11	TRANSFORMER ASSY, FLYBACK

THERMISTOR

Ref.No	Part No.	Description
TH901	1-807-938-11	THERMISTOR

SOCKET

Ref.No	Part No.	Description
W901	1-540-019-21	SOCKET ASSY, CRT

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*1-629-384-21 LD-13P BOARD (Ref.No 8,000 Series)
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DIODE

Ref.No	Part No.	Description
D901	8-719-941-34	DIODE GL1HD51
D902	8-719-812-41	DIODE TLR124

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*A-7061-951-A CD-17P BOARD, COMPLETE (Ref.No 1,000 Series)
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3-831-441-XX CUSHION

CAPACITOR

Ref.No	Part No.	Description			Remark
C601	1-126-193-11	ELECT CHIP	1MF	20%	50V
C602	1-126-607-11	ELECT CHIP	47MF	20%	4V
C603	1-126-602-11	ELECT CHIP	3.3MF	20%	50V
C604	1-126-602-11	ELECT CHIP	3.3MF	20%	50V
C606	1-164-161-11	CERAMIC CHIP	0.0022MF	10%	50V
C607	1-164-161-11	CERAMIC CHIP	0.0022MF	10%	50V
C608	1-164-005-11	CERAMIC CHIP	0.47MF		25V
C610	1-135-145-11	TANTAL. CHIP	0.47MF	20%	25V
C611	1-164-161-11	CERAMIC CHIP	0.0022MF	10%	50V
C612	1-163-016-00	CERAMIC CHIP	0.0039MF	10%	50V
C613	1-164-232-11	CERAMIC CHIP	0.01MF	10%	50V
C614	1-164-232-11	CERAMIC CHIP	0.01MF	10%	50V
C615	1-163-009-11	CERAMIC CHIP	0.001MF	10%	50V
C617	1-163-023-00	CERAMIC CHIP	0.015MF	10%	50V
C619	1-126-405-11	ELECT CHIP	10MF	20%	50V
C620	1-163-036-00	CERAMIC CHIP	0.068MF		50V
C621	1-164-161-11	CERAMIC CHIP	0.0022MF	10%	50V

The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety. Replace only with part number specified.

When indicating parts by reference number, please include the board name.

Ref.No	Part No.	Description	Remark
C630	1-162-638-11	CERAMIC CHIP 1MF	16V
C631	1-163-117-00	CERAMIC CHIP 100PF 5%	50V
C632	1-163-117-00	CERAMIC CHIP 100PF 5%	50V
		CONNECTOR	
CN601	*1-566-195-11	PIN, CONNECTOR (PC BOARD) 2P	
CN602	*1-566-196-11	PIN, CONNECTOR (PC BOARD) 3P	
CN603	*1-566-195-21	PIN, CONNECTOR (PC BOARD) 2P	
CN604	*1-566-198-11	PIN, CONNECTOR (PC BOARD) 5P	
CN605	*1-566-201-11	PIN, CONNECTOR (PC BOARD) 8P	
		DIODE	
D601	8-719-104-31	DIODE MA152WK	
D602	8-719-104-34	DIODE 1S2836	
D603	8-719-104-31	DIODE MA152WK	
D604	8-719-104-31	DIODE MA152WK	
		IC	
IC601	A-7091-132-A	ICX027BK-2 ASSY (CCD IMAGER)	
		COIL	
L601	1-410-393-11	INDUCTOR CHIP 100UH	
		TRANSISTOR	
Q601	8-729-105-53	TRANSISTOR 2SK300-3	
Q602	8-729-100-66	TRANSISTOR 2SC1623	
Q603	8-729-100-66	TRANSISTOR 2SC1623	
Q604	8-729-100-66	TRANSISTOR 2SC1623	
Q605	8-729-100-66	TRANSISTOR 2SC1623	
Q606	8-729-216-22	TRANSISTOR 2SA1162	
Q607	8-729-104-26	TRANSISTOR 2SB804-AW	
Q608	8-729-103-72	TRANSISTOR 2SD1005-BV	
Q609	8-729-216-22	TRANSISTOR 2SA1162	
Q610	8-729-100-66	TRANSISTOR 2SC1623	
		RESISTOR	
R601	1-216-025-00	METAL GLAZE 100 5% 1/10W	
R602	1-216-081-00	METAL GLAZE 22K 5% 1/10W	
R603	1-216-063-00	METAL GLAZE 3.9K 5% 1/10W	
R604	1-216-075-00	METAL GLAZE 12K 5% 1/10W	
R605	1-216-079-00	METAL GLAZE 18K 5% 1/10W	
R606	1-216-041-00	METAL GLAZE 470 5% 1/10W	
R607	1-216-121-00	METAL GLAZE 1M 5% 1/10W	
R608	1-216-045-00	METAL GLAZE 680 5% 1/10W	
R609	1-216-091-00	METAL GLAZE 56K 5% 1/10W	
R610	1-216-077-00	METAL GLAZE 15K 5% 1/10W	
R611	1-216-073-00	METAL GLAZE 10K 5% 1/10W	
R612	1-216-095-00	METAL GLAZE 82K 5% 1/10W	
R613	1-216-095-00	METAL GLAZE 82K 5% 1/10W	
R614	1-216-077-00	METAL GLAZE 15K 5% 1/10W	
R615	1-216-109-00	METAL GLAZE 330K 5% 1/10W	
R616	1-216-005-00	METAL GLAZE 15 5% 1/10W	
R617	1-216-005-00	METAL GLAZE 15 5% 1/10W	
R618	1-216-081-00	METAL GLAZE 22K 5% 1/10W	
R619	1-216-085-00	METAL GLAZE 33K 5% 1/10W	
R620	1-216-073-00	METAL GLAZE 10K 5% 1/10W	
R621	1-216-073-00	METAL GLAZE 10K 5% 1/10W	
R622	1-216-073-00	METAL GLAZE 10K 5% 1/10W	
R630	1-216-081-00	METAL GLAZE 22K 5% 1/10W	
R631	1-216-073-00	METAL GLAZE 10K 5% 1/10W	
R632	1-216-095-00	METAL GLAZE 82K 5% 1/10W	
R633	1-216-089-00	METAL GLAZE 47K 5% 1/10W	
R634	1-216-067-00	METAL GLAZE 5.6K 5% 1/10W	
R635	1-216-081-00	METAL GLAZE 22K 5% 1/10W	
R636	1-216-295-00	METAL GLAZE 0 5% 1/10W	
		CONNECTOR	
W601	1-575-151-11	CABLE, FLAT (1.0MM PITCH)	
W603	1-575-063-11	CABLE, FLAT (1.0MM PITCH) 14P	

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*1-631-828-21 VK-3P BOARD (Ref.No 9,000 Series)

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Ref.No	Part No.	Description	Remark
		CONNECTOR	
CN508	*1-566-182-11	PIN, CONNECTOR (PC BOARD) 3P	
		DIODE	
D501	8-719-104-31	DIODE MA152WK	
D502	8-719-104-34	DIODE 1S2836	
D503	8-719-104-34	DIODE 1S2836	
D504	8-719-801-41	DIODE 1SS196	
D505	8-719-104-31	DIODE MA152WK (AEP, UK MODEL)	
		TRANSISTOR	
Q501	8-729-903-30	TRANSISTOR DTC144TK	
Q502	8-729-903-30	TRANSISTOR DTC144TK	
		SWITCH	
S501	1-571-101-12	SWITCH, SLIDE (POWER)	
S502	1-572-078-11	SWITCH, TACTILE (REW◀◀)	
S503	1-572-078-11	SWITCH, TACTILE (▷ PB)	
S504	1-572-078-11	SWITCH, TACTILE (FF▶▶)	
S505	1-572-078-11	SWITCH, TACTILE (□ STOP)	
S506	1-572-078-11	SWITCH, TACTILE (▮▮ PAUSE)	
S507	1-571-102-21	SWITCH, SLIDE (REC)(Australian, E MODEL)	
S508	1-571-102-11	SWITCH, SLIDE (EJECT)	
S509	1-572-078-11	SWITCH, TACTILE (DATA SCREEN)	
S510	1-553-977-00	SWITCH, SLIDE (EDIT)	
		CONNECTOR	
W507	1-574-471-11	CABLE, FLAT (1.0MM PITCH) 12P	

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When indicating parts by reference number, please include the board name.

Ref.No	Part No.	Description	Remark
	*A-7061-953-A	CC-26P BOARD, COMPLETE (Ref.No 7,000 Series) ***********************	

CAPACITOR

Ref.No	Part No.	Description	Remark
C001	1-162-638-11	CERAMIC CHIP 1MF	16V
C002	1-162-638-11	CERAMIC CHIP 1MF	16V
C003	1-163-038-00	CERAMIC CHIP 0.1MF	25V

CONNECTOR

Ref.No	Part No.	Description	Remark
CN001	1-566-529-11	CONNECTOR, FPC (ZIF) 13P	
CN002	1-566-527-11	CONNECTOR, FPC (ZIF) 11P	

DIODE

Ref.No	Part No.	Description	Remark
D001	8-719-104-31	DIODE MA152WK	
D002	8-719-104-31	DIODE MA152WK	
D003	8-719-104-31	DIODE MA152WK	

IC

Ref.No	Part No.	Description	Remark
IC001	8-759-100-93	IC UPC393G2	

TRANSISTOR

Ref.No	Part No.	Description	Remark
Q002	8-729-903-30	TRANSISTOR DTC144TK	
Q004	8-729-903-30	TRANSISTOR DTC144TK	
Q005	8-729-903-30	TRANSISTOR DTC144TK	
Q006	8-729-900-53	TRANSISTOR DTC114EK	

RESISTOR

Ref.No	Part No.	Description			
R001	1-216-061-00	METAL GLAZE	3.3K	5%	1/10W
R002	1-216-109-00	METAL GLAZE	330K	5%	1/10W
R003	1-216-109-00	METAL GLAZE	330K	5%	1/10W
R004	1-216-097-00	METAL GLAZE	100K	5%	1/10W
R005	1-216-097-00	METAL GLAZE	100K	5%	1/10W
R006	1-216-089-00	METAL GLAZE	47K	5%	1/10W
R007	1-216-174-00	METAL GLAZE	100	5%	1/8W
R008	1-216-041-00	METAL GLAZE	470	5%	1/10W
R009	1-216-121-00	METAL GLAZE	1M	5%	1/10W
R010	1-216-121-00	METAL GLAZE	1M	5%	1/10W
R011	1-216-089-00	METAL GLAZE	47K	5%	1/10W
R012	1-216-109-00	METAL GLAZE	330K	5%	1/10W
R013	1-216-109-00	METAL GLAZE	330K	5%	1/10W
R014	1-216-061-00	METAL GLAZE	3.3K	5%	1/10W
R015	1-216-097-00	METAL GLAZE	100K	5%	1/10W
R016	1-216-097-00	METAL GLAZE	100K	5%	1/10W

CONNECTOR

Ref.No	Part No.	Description	Remark
W501	1-574-471-11	CABLE, FLAT (1.0MM PITCH) 13P	

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Ref.No	Part No.	Description	Remark
	*A-7061-954-A	CK-19P BOARD, COMPLETE (Ref.No 4,000 Series) ***********************	
	3-712-410-01	HOLDER, RS	

CAPACITOR

Ref.No	Part No.	Description		Remark
C651	1-163-093-00	CERAMIC CHIP 10PF	5%	50V
C652	1-163-038-00	CERAMIC CHIP 0.1MF		25V
C654	1-163-105-00	CERAMIC CHIP 33PF	5%	50V
C655	1-135-149-21	TANTAL. CHIP 2.2MF	20%	10V
C656	1-135-149-21	TANTAL. CHIP 2.2MF	20%	10V
C657	1-135-157-21	TANTAL. CHIP 10MF	20%	6.3V
C658	1-163-038-00	CERAMIC CHIP 0.1MF		25V
C659	1-162-638-11	CERAMIC CHIP 1MF		16V
C660	1-163-989-11	CERAMIC CHIP 0.033MF	10%	25V

TRIMMER

Ref.No	Part No.	Description	Remark
CV651	1-141-368-11	CAP, CHIP TRIMMER (30P)	

DIODE

Ref.No	Part No.	Description	Remark
D651	8-719-938-72	DIODE SB01-05CP	
D652	8-719-400-18	DIODE MA152WK	
D653	8-719-400-18	DIODE MA152WK	
D654	8-719-400-18	DIODE MA152WK	
D655	8-719-400-18	DIODE MA152WK	
D656	8-719-400-18	DIODE MA152WK	
D657	8-719-400-18	DIODE MA152WK	
D658	8-719-400-18	DIODE MA152WK	
D660	8-719-939-11	DIODE GP2S09-B	

IC

Ref.No	Part No.	Description	Remark
IC651	8-759-147-08	IC UPD7508BGB-512	

COIL

Ref.No	Part No.	Description	Remark
L651	1-410-391-11	INDUCTOR CHIP 68UH	

TRANSISTOR

Ref.No	Part No.	Description	Remark
Q651	8-729-901-03	TRANSISTOR DTC144WK	
Q652	8-729-216-22	TRANSISTOR 2SA1162	
Q653	8-729-901-03	TRANSISTOR DTC144WK	
Q654	8-729-220-93	TRANSISTOR 2SK209G	
Q655	8-729-216-22	TRANSISTOR 2SA1162	
Q656	8-729-216-22	TRANSISTOR 2SA1162	
Q657	8-729-216-22	TRANSISTOR 2SA1162	
Q658	8-729-100-66	TRANSISTOR 2SC1623	
Q659	8-729-100-66	TRANSISTOR 2SC1623	
Q660	8-729-216-22	TRANSISTOR 2SA1162	
Q661	8-729-216-22	TRANSISTOR 2SA1162	
Q662	8-729-902-XX	TRANSISTOR DTC114TK	
Q663	8-729-902-XX	TRANSISTOR DTC114TK	
Q664	8-729-216-22	TRANSISTOR 2SA1162	
Q665	8-729-901-01	TRANSISTOR DTC144EK	

When indicating parts by reference number, please include the board name.

Ref.No	Part No.	Description	Remark
R651	1-216-097-00	METAL GLAZE 100K 5% 1/10W	
R652	1-216-073-00	METAL GLAZE 10K 5% 1/10W	
R653	1-216-097-00	METAL GLAZE 100K 5% 1/10W	
R654	1-216-073-00	METAL GLAZE 10K 5% 1/10W	
R655	1-216-097-00	METAL GLAZE 100K 5% 1/10W	
R656	1-216-073-00	METAL GLAZE 10K 5% 1/10W	
R657	1-216-097-00	METAL GLAZE 100K 5% 1/10W	
R658	1-216-073-00	METAL GLAZE 10K 5% 1/10W	
R659	1-216-097-00	METAL GLAZE 100K 5% 1/10W	
R660	1-216-097-00	METAL GLAZE 100K 5% 1/10W	
R661	1-216-097-00	METAL GLAZE 100K 5% 1/10W	
R662	1-216-097-00	METAL GLAZE 100K 5% 1/10W	
R663	1-216-089-00	METAL GLAZE 47K 5% 1/10W	
R664	1-216-093-00	METAL GLAZE 68K 5% 1/10W	
R665	1-216-085-00	METAL GLAZE 33K 5% 1/10W	
R666	1-216-025-00	METAL GLAZE 100 5% 1/10W	
R667	1-216-129-00	METAL GLAZE 2.2M 5% 1/10W	
R668	1-216-097-00	METAL GLAZE 100K 5% 1/10W	
R669	1-216-105-00	METAL GLAZE 220K 5% 1/10W	
R670	1-216-246-00	METAL GLAZE 100K 5% 1/8W	
R671	1-216-109-00	METAL GLAZE 330K 5% 1/10W	
R672	1-216-097-00	METAL GLAZE 100K 5% 1/10W	
R673	1-216-097-00	METAL GLAZE 100K 5% 1/10W	
R674	1-216-097-00	METAL GLAZE 100K 5% 1/10W	
R675	1-216-097-00	METAL GLAZE 100K 5% 1/10W	
R676	1-216-103-00	METAL GLAZE 180K 5% 1/10W	
R677	1-216-121-00	METAL GLAZE 1M 5% 1/10W	
R678	1-218-167-11	METAL GLAZE 330K 1% 1/10W	
R679	1-216-121-00	METAL GLAZE 1M 5% 1/10W	
R680	1-218-167-11	METAL GLAZE 330K 1% 1/10W	
R681	1-216-336-11	METAL GLAZE 47K 1% 1/10W	
R682	1-216-097-00	METAL GLAZE 100K 5% 1/10W	
R683	1-216-109-00	METAL GLAZE 330K 5% 1/10W	
R684	1-216-097-00	METAL GLAZE 100K 5% 1/10W	
R685	1-216-049-00	METAL GLAZE 1K 5% 1/10W	
R686	1-216-049-00	METAL GLAZE 1K 5% 1/10W	
R687	1-216-049-00	METAL GLAZE 1K 5% 1/10W	
R688	1-216-049-00	METAL GLAZE 1K 5% 1/10W	
R689	1-216-097-00	METAL GLAZE 100K 5% 1/10W	
R690	1-216-049-00	METAL GLAZE 1K 5% 1/10W	
R691	1-216-049-00	METAL GLAZE 1K 5% 1/10W	
R692	1-216-097-00	METAL GLAZE 100K 5% 1/10W	
R693	1-216-049-00	METAL GLAZE 1K 5% 1/10W	
R695	1-216-025-00	METAL GLAZE 100 5% 1/10W	
R696	1-216-097-00	METAL GLAZE 100K 5% 1/10W	
R697	1-216-296-00	METAL GLAZE 0 5% 1/8W	
R698	1-216-296-00	METAL GLAZE 0 5% 1/8W	
R699	1-216-296-00	METAL GLAZE 0 5% 1/8W	
R700	1-216-295-00	METAL GLAZE 0 5% 1/10W	
R701	1-216-295-00	METAL GLAZE 0 5% 1/10W	
R702	1-216-296-00	METAL GLAZE 0 5% 1/8W	
R703	1-216-296-00	METAL GLAZE 0 5% 1/8W	
R704	1-216-295-00	METAL GLAZE 0 5% 1/10W	

Ref.No	Part No.	Description	Remark
R705	1-216-295-00	METAL GLAZE 0 5% 1/10W	
R706	1-216-295-00	METAL GLAZE 0 5% 1/10W	
R707	1-216-295-00	METAL GLAZE 0 5% 1/10W	
R708	1-216-296-00	METAL GLAZE 0 5% 1/8W	
R709	1-216-041-00	METAL GLAZE 470 5% 1/10W	
R711	1-216-295-00	METAL GLAZE 0 5% 1/10W	

VARIABLE RESISTOR

Ref.No	Part No.	Description
RV651	1-230-874-11	RES, ADJ, METAL GLAZE 100K

SWITCH

Ref.No	Part No.	Description
S652	1-572-078-11	SWITCH, TACTILE (SUTTER SPEED)
S653	1-572-078-11	SWITCH, TACTILE (BACK LIGHT)
S654	1-572-078-11	SWITCH, TACTILE (WHITE BAL)
S655	1-572-078-11	SWITCH, TACTILE (FOCUS)
S656	1-572-078-11	SWITCH, TACTILE (COLOR/MODE)
S657	1-572-078-11	SWITCH, TACTILE (MEMORY)
S658	1-572-078-11	SWITCH, TACTILE (SUPERIMPOSE ON/OFF)
S659	1-572-078-11	SWITCH, TACTILE (TIME NEXT)
S660	1-572-078-11	SWITCH, TACTILE (DATE +)

CRYSTAL

Ref.No	Part No.	Description
X651	1-527-997-21	VIBRATOR, CRYSTAL (32.768KHz)

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*1-631-825-21 DK-4P BOARD (Ref.No 5,000 Series)
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DIODE

Ref.No	Part No.	Description
D691	8-719-400-18	DIODE MA152WK
D692	8-719-400-18	DIODE MA152WK

SWITCH

Ref.No	Part No.	Description
S691	1-572-078-11	SWITCH, TACTILE (EDITSEARCH +)
S692	1-572-078-11	SWITCH, TACTILE (EDIT SEARCH -)
S693	1-572-078-11	SWITCH, TACTILE (COUNTER RESET)
S694	1-572-078-11	SWITCH, TACTILE (ZERO MEMO)

CONNECTOR

Ref.No	Part No.	Description
W652	1-575-062-11	CABLE, FLAT (1.0MM PITCH) 6P

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When indicating parts by reference number, please include the board name.

Ref.No	Part No.	Description		Remark
	*A-7061-957-A	CV-9 BOARD, COMPLETE (Ref.No 2,000 Series) ******************** (AEP, UK MODEL)		
	*A-7062-054-A	CV-9 BOARD, COMPLETE (Ref.No 2,000 Series) ******************** (Australian, E MODEL)		
	A-7068-128-A	MX-7 BOARD, COMPLETE (HIC)		
	A-7068-161-A	DT-79D BOARD, COMPLETE (HIC) (AEP(TYPE 1), Australian, E MODEL)		
	A-7068-162-A	DT-79A BOARD, COMPLETE (HIC) (AEP(TYPE 2), UK MODEL)		

CAPACITOR

Ref.No	Part No.	Description		Remark
C201	1-164-232-11	CERAMIC CHIP 0.01MF	10%	50V
C202	1-124-779-00	ELECT CHIP 10MF	20%	16V
C203	1-164-232-11	CERAMIC CHIP 0.01MF	10%	50V
C204	1-124-779-00	ELECT CHIP 10MF	20%	16V
C205	1-162-638-11	CERAMIC CHIP 1MF		16V
C206	1-124-779-00	ELECT CHIP 10MF	20%	16V
C209	1-126-205-11	ELECT CHIP 47MF	20%	6.3V
C210	1-162-638-11	CERAMIC CHIP 1MF	16V	(Australian, E)
C211	1-164-247-11	CERAMIC CHIP 0.047MF	10%	16V
C212	1-162-638-11	CERAMIC CHIP 1MF		16V
C213	1-124-779-00	ELECT CHIP 10MF	20%	16V
C214	1-126-246-11	ELECT CHIP 220MF	20%	4V
C215	1-164-232-11	CERAMIC CHIP 0.01MF	10%	50V
C216	1-124-779-00	ELECT CHIP 10MF	20%	16V
C217	1-164-232-11	CERAMIC CHIP 0.01MF	10%	50V
C218	1-162-638-11	CERAMIC CHIP 1MF		16V
C219	1-126-193-11	ELECT CHIP 1MF	20%	50V
C220	1-163-117-00	CERAMIC CHIP 100PF	5%	50V
C221	1-163-117-00	CERAMIC CHIP 100PF	5%	50V
C223	1-163-038-00	CERAMIC CHIP 0.1MF		25V
C224	1-135-091-00	TANTAL. CHIP 1MF	20%	16V
C225	1-162-638-11	CERAMIC CHIP 1MF		16V
C226	1-163-077-00	CERAMIC CHIP 0.1MF	10%	25V
C227	1-163-038-00	CERAMIC CHIP 0.1MF		25V
C228	1-135-180-21	TANTAL. CHIP 3.3MF	20%	6.3V
C229	1-164-232-11	CERAMIC CHIP 0.01MF	10%	50V
C230	1-162-638-11	CERAMIC CHIP 1MF		16V
C231	1-163-037-11	CERAMIC CHIP 0.022MF	10%	25V
C232	1-135-180-21	TANTAL. CHIP 3.3MF	20%	6.3V
C233	1-135-157-21	TANTAL. CHIP 10MF	20%	6.3V
C234	1-135-157-21	TANTAL. CHIP 10MF	20%	6.3V
C235	1-162-638-11	CERAMIC CHIP 1MF		16V
C236	1-135-157-21	TANTAL. CHIP 10MF	20%	6.3V
C237	1-162-638-11	CERAMIC CHIP 1MF		16V
C238	1-135-180-21	TANTAL. CHIP 3.3MF	20%	6.3V
C239	1-164-232-11	CERAMIC CHIP 0.01MF	10%	50V
C240	1-135-091-00	TANTAL. CHIP 1MF	20%	16V
C241	1-162-638-11	CERAMIC CHIP 1MF		16V
C242	1-135-091-00	TANTAL. CHIP 1MF	20%	16V
C243	1-135-091-00	TANTAL. CHIP 1MF	20%	16V
C245	1-126-100-11	ELECT 10MF	20%	6.3V
C246	1-164-232-11	CERAMIC CHIP 0.01MF	10%	50V
C247	1-135-157-21	TANTAL. CHIP 10MF	20%	6.3V
C248	1-124-779-00	ELECT CHIP 10MF	20%	16V
C249	1-124-779-00	ELECT CHIP 10MF	20%	16V
C250	1-135-157-21	TANTAL. CHIP 10MF	20%	6.3V
C251	1-163-009-11	CERAMIC CHIP 0.001MF	10%	50V
C252	1-124-779-00	ELECT CHIP 10MF	20%	16V
C253	1-164-232-11	CERAMIC CHIP 0.01MF	10%	50V
C254	1-164-232-11	CERAMIC CHIP 0.01MF	10%	50V
C257	1-124-779-00	ELECT CHIP 10MF	20%	16V
C258	1-163-133-00	CERAMIC CHIP 470PF	5%	50V
C259	1-163-131-00	CERAMIC CHIP 390PF	5%	50V
C260	1-124-779-00	ELECT CHIP 10MF	20%	16V
C265	1-124-779-00	ELECT CHIP 10MF	20%	16V
C269	1-164-232-11	CERAMIC CHIP 0.01MF	10%	50V
C270	1-164-232-11	CERAMIC CHIP 0.01MF	10%	50V
C271	1-163-089-00	CERAMIC CHIP 6PF	0.25PF	50V
C273	1-163-038-00	CERAMIC CHIP 0.1MF		25V
C274	1-164-232-11	CERAMIC CHIP 0.01MF	10%	50V
C275	1-163-095-00	CERAMIC CHIP 12PF	5%	50V
C276	1-124-778-00	ELECT CHIP 22MF	20%	6.3V
C277	1-162-638-11	CERAMIC CHIP 1MF		16V
C278	1-163-129-00	CERAMIC CHIP 330PF	5%	50V
C279	1-163-113-00	CERAMIC CHIP 68PF	5%	50V
C280	1-164-232-11	CERAMIC CHIP 0.01MF	10%	50V
C281	1-124-778-00	ELECT CHIP 22MF	20%	6.3V
C287	1-124-287-00	ELECT 10MF	20%	10V
C288	1-164-232-11	CERAMIC CHIP 0.01MF	10%	50V
C289	1-124-779-00	ELECT CHIP 10MF	20%	16V
C291	1-163-037-11	CERAMIC CHIP 0.022MF	10%	25V
C292	1-164-232-11	CERAMIC CHIP 0.01MF	10%	50V
C293	1-163-095-00	CERAMIC CHIP 12PF	5%	50V
C294	1-163-037-11	CERAMIC CHIP 0.022MF	10%	25V
C295	1-163-101-00	CERAMIC CHIP 22PF	5%	50V
C296	1-163-105-00	CERAMIC CHIP 33PF	5%	50V
C298	1-163-037-11	CERAMIC CHIP 0.022MF	10%	25V
C300	1-164-161-11	CERAMIC CHIP 0.0022MF	10%	50V
C301	1-163-105-00	CERAMIC CHIP 33PF	5%	50V
C302	1-163-109-00	CERAMIC CHIP 47PF	5%	50V
C304	1-163-127-00	CERAMIC CHIP 270PF	5%	50V
C305	1-163-133-00	CERAMIC CHIP 470PF	5%	50V
C306	1-124-778-00	ELECT CHIP 22MF	20%	6.3V
C307	1-164-232-11	CERAMIC CHIP 0.01MF	10%	50V
C308	1-163-107-00	CERAMIC CHIP 39PF	5%	50V
C309	1-163-097-00	CERAMIC CHIP 15PF	5%	50V
C310	1-164-232-11	CERAMIC CHIP 0.01MF	10%	50V
C311	1-163-109-00	CERAMIC CHIP 47PF	5%	50V
C312	1-163-123-00	CERAMIC CHIP 180PF	5%	50V
C313	1-163-117-00	CERAMIC CHIP 100PF	5%	50V

When indicating parts by reference number, please include the board name.

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Ref.No	Part No.	Description		Remark
C314	1-163-109-00	CERAMIC CHIP 47PF	5%	50V
C315	1-163-038-00	CERAMIC CHIP 0.1MF		25V
C316	1-163-115-00	CERAMIC CHIP 82PF	5%	50V
C317	1-164-182-11	CERAMIC CHIP 0.0033MF	10%	50V
C327	1-163-103-00	CERAMIC CHIP 27PF	5%	50V
C333	1-135-157-21	TANTAL. CHIP 10MF	20%	6.3V
C334	1-164-232-11	CERAMIC CHIP 0.01MF	10%	50V
C336	1-164-232-11	CERAMIC CHIP 0.01MF	10%	50V
C343	1-163-118-00	CERAMIC CHIP 110PF	5%	50V
C350	1-163-119-00	CERAMIC CHIP 120PF	5%	50V
C357	1-163-038-00	CERAMIC CHIP 0.1MF		25V
C360	1-163-117-00	CERAMIC CHIP 100PF	5%	50V
C374	1-164-161-11	CERAMIC CHIP 0.0022MF	10%	50V
C401	1-163-111-00	CERAMIC CHIP 56PF	5%	50V
C402	1-124-779-00	ELECT CHIP 10MF	20%	16V
C403	1-163-127-00	CERAMIC CHIP 270PF	5%	50V
C404	1-163-101-00	CERAMIC CHIP 22PF	5%	50V
C407	1-163-037-11	CERAMIC CHIP 0.022MF	10%	25V
C409	1-163-123-00	CERAMIC CHIP 180PF	5%	50V
C411	1-163-118-00	CERAMIC CHIP 110PF	5%	50V
C413	1-163-101-00	CERAMIC CHIP 22PF	5%	50V
C414	1-124-778-00	ELECT CHIP 22MF	20%	6.3V
C415	1-163-038-00	CERAMIC CHIP 0.1MF		25V
C416	1-163-099-00	CERAMIC CHIP 18PF	5%	50V
C417	1-163-133-00	CERAMIC CHIP 470PF	5%	50V
C418	1-163-038-00	CERAMIC CHIP 0.1MF		25V
C419	1-163-117-00	CERAMIC CHIP 100PF	5%	50V
C451	1-162-638-11	CERAMIC CHIP 1MF		16V
C452	1-162-638-11	CERAMIC CHIP 1MF		16V
C501	1-163-105-00	CERAMIC CHIP 33PF	5%	50V
C502	1-163-117-00	CERAMIC CHIP 100PF	5%	50V
C503	1-163-109-00	CERAMIC CHIP 47PF	5%	50V
C504	1-163-109-00	CERAMIC CHIP 47PF	5%	50V
C505	1-163-109-00	CERAMIC CHIP 47PF	5%	50V
C506	1-164-232-11	CERAMIC CHIP 0.01MF	10%	50V
C507	1-164-232-11	CERAMIC CHIP 0.01MF	10%	50V
C508	1-124-779-00	ELECT CHIP 10MF	20%	16V
C509	1-164-232-11	CERAMIC CHIP 0.01MF	10%	50V
C510	1-163-009-11	CERAMIC CHIP 0.001MF	10%	50V
C511	1-163-141-00	CERAMIC CHIP 0.001MF	5%	50V
C512	1-163-123-00	CERAMIC CHIP 180PF	5%	50V
C513	1-163-093-00	CERAMIC CHIP 10PF	5%	50V
C514	1-163-005-11	CERAMIC CHIP 470PF	10%	50V
C515	1-163-038-00	CERAMIC CHIP 0.1MF		25V
C516	1-163-038-00	CERAMIC CHIP 0.1MF		25V
C517	1-163-038-00	CERAMIC CHIP 0.1MF		25V
C601	1-135-145-11	TANTAL. CHIP 0.47MF	20%	25V
C602	1-164-161-11	CERAMIC CHIP 0.0022MF	10%	50V
C603	1-164-161-11	CERAMIC CHIP 0.0022MF	10%	50V
C604	1-162-638-11	CERAMIC CHIP 1MF		16V
C605	1-162-638-11	CERAMIC CHIP 1MF		16V
C606	1-163-100-00	CERAMIC CHIP 20PF	5%	50V
C607	1-163-118-00	CERAMIC CHIP 110PF	5%	50V
C608	1-163-114-00	CERAMIC CHIP 75PF	5%	50V
C609	1-163-100-00	CERAMIC CHIP 20PF	5%	50V
C610	1-163-118-00	CERAMIC CHIP 110PF	5%	50V
C611	1-163-114-00	CERAMIC CHIP 75PF	5%	50V
C612	1-163-038-00	CERAMIC CHIP 0.1MF		25V
C613	1-163-038-00	CERAMIC CHIP 0.1MF		25V
C614	1-163-038-00	CERAMIC CHIP 0.1MF		25V
C615	1-163-097-00	CERAMIC CHIP 15PF	5%	50V
C616	1-163-038-00	CERAMIC CHIP 0.1MF		25V
C617	1-164-232-11	CERAMIC CHIP 0.01MF	10%	50V
C618	1-163-093-00	CERAMIC CHIP 10PF	5%	50V
C619	1-164-232-11	CERAMIC CHIP 0.01MF	10%	50V
C621	1-163-038-00	CERAMIC CHIP 0.1MF		25V
C622	1-163-095-00	CERAMIC CHIP 12PF	5%	50V
C623	1-164-232-11	CERAMIC CHIP 0.01MF	10%	50V
C624	1-163-109-00	CERAMIC CHIP 47PF	5%	50V
C626	1-164-232-11	CERAMIC CHIP 0.01MF	10%	50V
C627	1-163-005-11	CERAMIC CHIP 470PF	10%	50V
C628	1-163-005-11	CERAMIC CHIP 470PF	10%	50V
C629	1-163-005-11	CERAMIC CHIP 470PF	10%	50V
C631	1-164-161-11	CERAMIC CHIP 0.0022MF	10%	50V
C632	1-164-232-11	CERAMIC CHIP 0.01MF	10%	50V
C636	1-126-205-11	ELECT CHIP 47MF	20%	6.3V
C637	1-164-232-11	CERAMIC CHIP 0.01MF	10%	50V
C638	1-164-161-11	CERAMIC CHIP 0.0022MF	10%	50V
C639	1-124-779-00	ELECT CHIP 10MF	20%	16V
C640	1-164-232-11	CERAMIC CHIP 0.01MF	10%	50V
C641	1-164-232-11	CERAMIC CHIP 0.01MF	10%	50V
C642	1-163-038-00	CERAMIC CHIP 0.1MF		25V
C647	1-124-778-00	ELECT CHIP 22MF	20%	6.3V
C648	1-164-232-11	CERAMIC CHIP 0.01MF	10%	50V
C650	1-163-109-00	CERAMIC CHIP 47PF	5%	50V
C651	1-163-109-00	CERAMIC CHIP 47PF	5%	50V
C652	1-163-109-00	CERAMIC CHIP 47PF	5%	50V
C653	1-163-038-00	CERAMIC CHIP 0.1MF		25V
C654	1-164-161-11	CERAMIC CHIP 0.0022MF	10%	50V
C655	1-164-161-11	CERAMIC CHIP 0.0022MF	10%	50V
C656	1-163-093-00	CERAMIC CHIP 10PF	5%	50V
C658	1-162-638-11	CERAMIC CHIP 1MF		16V
C660	1-162-638-11	CERAMIC CHIP 1MF		16V
C661	1-163-809-11	CERAMIC CHIP 0.047MF	10%	25V
C662	1-162-638-11	CERAMIC CHIP 1MF		16V
C665	1-162-638-11	CERAMIC CHIP 1MF		16V
C666	1-164-232-11	CERAMIC CHIP 0.01MF	10%	50V
C669	1-164-232-11	CERAMIC CHIP 0.01MF	10%	50V
C673	1-163-131-00	CERAMIC CHIP 390PF	5%	50V
C675	1-163-009-11	CERAMIC CHIP 0.001MF	10%	50V
C676	1-163-101-00	CERAMIC CHIP 22PF	5%	50V
C677	1-164-161-11	CERAMIC CHIP 0.0022MF	10%	50V
C678	1-163-101-00	CERAMIC CHIP 22PF	5%	50V
C679	1-164-161-11	CERAMIC CHIP 0.0022MF	10%	50V
C681	1-163-005-11	CERAMIC CHIP 470PF	10%	50V
C683	1-163-038-00	CERAMIC CHIP 0.1MF		25V

When indicating parts by reference number, please include the board name.

Ref.No	Part No.	Description		Remark
C684	1-164-232-11	CERAMIC CHIP 0.01MF	10%	50V
C685	1-163-038-00	CERAMIC CHIP 0.1MF		25V
C686	1-164-232-11	CERAMIC CHIP 0.01MF	10%	50V
C687	1-163-009-11	CERAMIC CHIP 0.001MF	10%	50V
C689	1-164-232-11	CERAMIC CHIP 0.01MF		50V
C690	1-164-005-11	CERAMIC CHIP 000004700MF		25V
C691	1-163-038-00	CERAMIC CHIP 0.1MF		25V
C692	1-135-091-00	TANTAL. CHIP 1MF	20%	16V
C693	1-163-038-00	CERAMIC CHIP 0.1MF		25V
C694	1-163-038-00	CERAMIC CHIP 0.1MF		25V
C695	1-163-038-00	CERAMIC CHIP 0.1MF		25V
C696	1-163-109-00	CERAMIC CHIP 47PF	5%	50V
C697	1-163-111-00	CERAMIC CHIP 56PF	5%	50V
C699	1-164-161-11	CERAMIC CHIP 0.0022MF	10%	50V
C700	1-162-638-11	CERAMIC CHIP 1MF		16V
C701	1-164-232-11	CERAMIC CHIP 0.01MF	10%	50V
C702	1-162-638-11	CERAMIC CHIP 1MF		16V
C703	1-163-038-00	CERAMIC CHIP 0.1MF		25V
C704	1-124-566-11	ELECT 120MF	20%	6.3V
C705	1-164-232-11	CERAMIC CHIP 0.01MF	10%	50V
C706	1-163-038-00	CERAMIC CHIP 0.1MF		25V
C707	1-135-145-11	TANTAL. CHIP 0.47MF	20%	25V
C708	1-164-232-11	CERAMIC CHIP 0.01MF		50V
C709	1-163-093-00	CERAMIC CHIP 10PF	5%	50V
C710	1-164-005-11	CERAMIC CHIP 0.47MF		25V
C712	1-126-205-11	ELECT CHIP 47MF	20%	6.3V
C713	1-164-232-11	CERAMIC CHIP 0.01MF	10%	50V
C714	1-164-232-11	CERAMIC CHIP 0.01MF		50V
C715	1-163-117-00	CERAMIC CHIP 100PF	5%	50V
C716	1-163-038-00	CERAMIC CHIP 0.1MF		25V
C718	1-126-602-11	ELECT CHIP 3.3MF	20%	50V
C719	1-135-072-21	TANTAL. CHIP 0.22MF	20%	35V
C721	1-124-779-00	ELECT CHIP 10MF	20%	16V
C722	1-163-038-00	CERAMIC CHIP 0.1MF		25V
C723	1-126-602-11	ELECT CHIP 3.3MF	20%	50V
C724	1-126-602-11	ELECT CHIP 3.3MF	20%	50V
C725	1-162-638-11	CERAMIC CHIP 1MF		16V
C726	1-163-038-00	CERAMIC CHIP 0.1MF		25V
C727	1-126-602-11	ELECT CHIP 3.3MF	20%	50V
C729	1-163-038-00	CERAMIC CHIP 0.1MF		25V
C730	1-162-638-11	CERAMIC CHIP 1MF		16V
C731	1-163-038-00	CERAMIC CHIP 0.1MF		25V
C735	1-126-205-11	ELECT CHIP 47MF	20%	6.3V
C736	1-164-232-11	CERAMIC CHIP 0.01MF	10%	50V
C741	1-164-232-11	CERAMIC CHIP 0.01MF	10%	50V
C798	1-164-161-11	CERAMIC CHIP 0.0022MF	10%	50V
C799	1-164-161-11	CERAMIC CHIP 0.0022MF	10%	50V
C801	1-124-779-00	ELECT CHIP 10MF	20%	16V
C802	1-163-038-00	CERAMIC CHIP 0.1MF		25V
C803	1-163-038-00	CERAMIC CHIP 0.1MF		25V
C804	1-164-161-11	CERAMIC CHIP 0.0022MF	10%	50V
C805	1-163-038-00	CERAMIC CHIP 0.1MF		25V
C806	1-163-038-00	CERAMIC CHIP 0.1MF		25V

Ref.No	Part No.	Description		Remark
C807	1-164-232-11	CERAMIC CHIP 0.01MF		50V
C808	1-163-038-00	CERAMIC CHIP 0.1MF		25V
C809	1-163-115-00	CERAMIC CHIP 82PF	5%	50V
C810	1-163-119-00	CERAMIC CHIP 120PF	5%	50V
C811	1-163-125-00	CERAMIC CHIP 220PF	5%	50V
C812	1-163-125-00	CERAMIC CHIP 220PF	5%	50V
C813	1-162-638-11	CERAMIC CHIP 1MF		16V
C814	1-164-232-11	CERAMIC CHIP 0.01MF		50V
C815	1-163-038-00	CERAMIC CHIP 0.1MF		25V
C817	1-163-038-00	CERAMIC CHIP 0.1MF		25V
C818	1-162-638-11	CERAMIC CHIP 1MF		16V
C819	1-164-232-11	CERAMIC CHIP 0.01MF		50V
C820	1-163-038-00	CERAMIC CHIP 0.1MF		25V
C821	1-163-038-00	CERAMIC CHIP 0.1MF		25V
C822	1-164-232-11	CERAMIC CHIP 0.01MF		50V
C824	1-162-638-11	CERAMIC CHIP 1MF		16V
C825	1-162-637-11	CERAMIC CHIP 0.47MF		16V
C826	1-162-637-11	CERAMIC CHIP 0.47MF		16V
C827	1-164-232-11	CERAMIC CHIP 0.01MF		50V
C828	1-164-232-11	CERAMIC CHIP 0.01MF		50V
C829	1-163-125-00	CERAMIC CHIP 220PF	5%	50V
C830	1-163-038-00	CERAMIC CHIP 0.1MF		25V
C832	1-164-005-11	CERAMIC CHIP 0.47MF		25V
C835	1-163-033-00	CERAMIC CHIP 0.022MF		50V
C836	1-164-232-11	CERAMIC CHIP 0.01MF	10%	50V
C837	1-164-232-11	CERAMIC CHIP 0.01MF	10%	50V
C838	1-163-093-00	CERAMIC CHIP 10PF	5%	50V
C839	1-164-232-11	CERAMIC CHIP 0.01MF	10%	50V
C840	1-164-161-11	CERAMIC CHIP 0.0022MF	10%	50V
C841	1-163-033-00	CERAMIC CHIP 0.022MF		50V
C842	1-164-232-11	CERAMIC CHIP 0.01MF		50V
C843	1-124-779-00	ELECT CHIP 10MF	20%	16V
C844	1-126-205-11	ELECT CHIP 47MF	20%	6.3V
C845	1-163-009-11	CERAMIC CHIP 0.001MF	10%	50V
C846	1-163-038-00	CERAMIC CHIP 0.1MF		25V
C848	1-163-038-00	CERAMIC CHIP 0.1MF		25V
C849	1-164-005-11	CERAMIC CHIP 0.47MF		25V

CONNECTOR

CN501	1-568-165-11	CONNECTOR, FPC (1.0MM)(ZIF)22P		
CN502	1-568-165-11	CONNECTOR, FPC (1.0MM)(ZIF)22P		
CN601	1-566-547-11	CONNECTOR, FPC (NON ZIF) 15P		
CN602	1-565-527-11	PIN, CONNECTOR (PC BOARD) 2P		
CN801	1-566-530-11	CONNECTOR, FPC (ZIF) 14P		
CN802	1-568-207-11	CONNECTOR, FPC (ZIF) 23P		
CN803	*1-565-543-11	PIN, CONNECTOR (PC BOARD) 4P		
CN901	*1-566-759-11	PIN, CONNECTOR (PC BOARD) 4P		
CN902	*1-565-541-11	PIN, CONNECTOR (PC BOARD) 2P		

TRIMMER

CT601	1-141-331-11	CAP, VAR, TRIMMER (CHIP)		
CV501	1-141-331-11	CAP, VAR, TRIMMER (CHIP)		
CV502	1-141-331-11	CAP, VAR, TRIMMER (CHIP)		

When indicating parts by reference number, please include the board name.

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Ref.No	Part No.	Description	Remark
		DIODE	
D211	8-719-800-76	DIODE 1SS226	
D213	8-719-400-18	DIODE MA152WK	
D216	8-719-404-13	DIODE MA159-TX	
D217	8-719-404-13	DIODE MA159-TX	
D218	8-719-400-18	DIODE MA152WK	
D219	8-719-400-18	DIODE MA152WK	
D401	8-719-800-76	DIODE MA157	
D501	8-719-949-48	DIODE 1T32-2	
D601	8-719-104-34	DIODE 1S2836	
D602	8-719-400-18	DIODE MA152WK	
D604	8-719-400-18	DIODE MA152WK	
D605	8-713-949-48	DIODE 1T32-2	
D606	8-719-400-18	DIODE MA152WK	
D803	8-719-400-18	DIODE MA152WK	
		FILTER	
FL201	1-409-446-11	FILTER, TRAP	
FL202	1-236-186-11	FILTER, BAND PASS	
FL203	1-577-162-11	FILTER, CERAMIC	
FL601	1-236-266-11	FILTER, LOW PASS (YH)	
FL602	1-236-267-11	FILTER, LOW PASS (YDL)	
FL604	1-236-192-11	FILTER, LOW PASS	
FL606	1-415-669-21	DL (LC)	
FL801	1-236-209-11	FILTER, LOW PASS	
		IC	
IC201	8-752-033-40	IC CXA1201Q	
IC202	8-752-324-87	IC CXL1502M	
IC203	8-752-034-40	IC CXA1200BQ	
IC501	8-759-140-26	IC UPD6145G-601	
IC502	8-759-970-80	IC MB673198U	
IC601	8-759-032-00	IC MC68HC05N4-SC406662	
IC602	8-759-932-54	IC BU4066BF	
IC603	8-759-100-95	IC UPC324G2	
IC604	8-752-326-08	IC CXD1159Q	
IC605	8-752-034-21	IC CXA1339R	
IC606	8-752-033-34	IC CXA1072R	
IC607	8-752-032-48	IC CXA1157M	
IC608	8-759-946-00	IC MB88341PFV	
IC609	8-759-946-00	IC MB88341PFV	
IC610	8-759-937-56	IC S-8054ALB-LM-S	
IC801	8-752-326-18	IC CXD1204R	
IC802	8-759-031-85	IC MC68HC05C4-SC411530	
IC803	8-759-971-93	IC MSM6219GS	
IC804	8-759-946-00	IC MB88341PFV	
IC805	8-759-030-35	IC MPC1725M	
IC806	8-759-979-41	IC LM358PS	
IC807	8-759-981-82	IC RC3414M	
IC808	8-759-979-41	IC LM358PS	
IC810	8-759-500-11	IC MM-1036XF	

Ref.No	Part No.	Description	Remark
		JACK	
J201	1-537-142-11	TERMINAL BOARD (AUDIO/RFU DC/VIDEO OUT)	
J202	1-568-409-11	JACK, PIN 2P (AUDIO/VIDEO IN) (Australian, E MODEL)	
		COIL	
L201	1-412-032-11	INDUCTOR CHIP 100UH	
L202	1-412-026-11	INDUCTOR CHIP 1UH	
L203	1-412-032-11	INDUCTOR CHIP 100UH	
L204	1-412-031-11	INDUCTOR CHIP 47UH	
L205	1-412-031-11	INDUCTOR CHIP 47UH	
L208	1-412-029-11	INDUCTOR CHIP 10UH	
L209	1-412-032-11	INDUCTOR CHIP 100UH	
L210	1-410-387-11	INDUCTOR CHIP 33UH	
L211	1-410-656-11	INDUCTOR CHIP 150UH	
L212	1-410-381-11	INDUCTOR CHIP 10UH	
L213	1-410-657-21	INDUCTOR CHIP 180UH	
L214	1-408-797-11	INDUCTOR CHIP 470UH	
L215	1-408-795-21	INDUCTOR CHIP 330UH	
L216	1-408-795-21	INDUCTOR CHIP 330UH	
L217	1-410-657-21	INDUCTOR CHIP 180UH	
L219	1-412-032-11	INDUCTOR CHIP 100UH	
L220	1-410-380-31	INDUCTOR CHIP 8.2UH	
L221	1-408-795-21	INDUCTOR CHIP 330UH	
L222	1-410-655-31	INDUCTOR CHIP 120UH	
L223	1-410-393-11	INDUCTOR CHIP 100UH	
L224	1-410-656-11	INDUCTOR CHIP 150UH	
L227	1-410-389-31	INDUCTOR CHIP 47UH	
L228	1-410-388-21	INDUCTOR CHIP 39UH	
L401	1-410-390-11	INDUCTOR CHIP 56UH	
L402	1-410-387-11	INDUCTOR CHIP 33UH	
L404	1-410-383-31	INDUCTOR CHIP 15UH	
L405	1-410-388-21	INDUCTOR CHIP 39UH	
L501	1-410-390-11	INDUCTOR CHIP 56UH	
L502	1-412-032-11	INDUCTOR CHIP 100UH	
L503	1-408-797-11	INDUCTOR CHIP 470UH	
L601	1-412-031-11	INDUCTOR CHIP 47UH	
L602	1-412-029-11	INDUCTOR CHIP 10UH	
L603	1-412-029-11	INDUCTOR CHIP 10UH	
L604	1-412-026-11	INDUCTOR CHIP 1UH	
L605	1-412-026-11	INDUCTOR CHIP 1UH	
L606	1-412-026-11	INDUCTOR CHIP 1UH	
L607	1-412-032-11	INDUCTOR CHIP 100UH	
L608	1-412-029-11	INDUCTOR CHIP 10UH	
L609	1-412-032-11	INDUCTOR CHIP 100UH	
L610	1-412-029-11	INDUCTOR CHIP 10UH	
L613	1-412-031-11	INDUCTOR CHIP 47UH	
L614	1-410-657-21	INDUCTOR CHIP 180UH	
L801	1-410-655-31	INDUCTOR CHIP 120UH	
		TRANSISTOR	
Q202	8-729-100-66	TRANSISTOR 2SC1623	

When indicating parts by reference number, please include the board name.

Ref.No	Part No.	Description	Remark
Q203	8-729-100-66	TRANSISTOR 2SC1623	
Q204	8-729-101-07	TRANSISTOR 2SB798-DL	
Q206	8-729-901-01	TRANSISTOR DTC144EK	
Q207	8-729-901-01	TRANSISTOR DTC144EK	
Q208	8-729-901-01	TRANSISTOR DTC144EK	
Q209	8-729-216-22	TRANSISTOR 2SA1162	
Q210	8-729-101-07	TRANSISTOR 2SB798-DL	
Q211	8-729-901-01	TRANSISTOR DTC144EK	
Q212	8-729-901-01	TRANSISTOR DTC144EK	
Q213	8-729-100-66	TRANSISTOR 2SC1623	
Q215	8-729-100-66	TRANSISTOR 2SC1623	
Q216	8-729-100-66	TRANSISTOR 2SC1623	
Q217	8-729-216-22	TRANSISTOR 2SA1162	
Q222	8-729-101-07	TRANSISTOR 2SB798-DL	
Q223	8-729-901-01	TRANSISTOR DTC144EK	
Q224	8-729-102-07	TRANSISTOR 2SC2223-F13	
Q225	8-729-100-66	TRANSISTOR 2SC1623	
Q226	8-729-901-06	TRANSISTOR DTA144EK	
Q227	8-729-805-41	TRANSISTOR 2SC3398	
Q228	8-729-100-66	TRANSISTOR 2SC1623	
Q229	8-729-216-22	TRANSISTOR 2SA1162	
Q230	8-729-122-63	TRANSISTOR 2SA1226	
Q231	8-729-102-07	TRANSISTOR 2SC2223-F13	
Q232	8-729-102-07	TRANSISTOR 2SC2223-F13	
Q233	8-729-216-22	TRANSISTOR 2SA1162	
Q241	8-729-901-06	TRANSISTOR DTA144EK	
Q242	8-729-901-01	TRANSISTOR DTC144EK	
Q243	8-729-100-66	TRANSISTOR 2SC1623	
Q244	8-729-901-01	TRANSISTOR DTC144EK	
Q250	8-729-100-66	TRANSISTOR 2SC1623	
Q251	8-729-216-22	TRANSISTOR 2SA1162	
Q254	8-729-100-66	TRANSISTOR 2SC1623	
Q401	8-729-402-84	TRANSISTOR XN4601	
Q403	8-729-421-23	TRANSISTOR XN1216	
Q405	8-729-100-66	TRANSISTOR 2SC1623	
Q406	8-729-100-66	TRANSISTOR 2SC1623	
Q407	8-729-100-66	TRANSISTOR 2SC1623	
Q408	8-729-216-22	TRANSISTOR 2SA1162	
Q409	8-729-102-07	TRANSISTOR 2SC2223-F13	
Q410	8-729-216-22	TRANSISTOR 2SA1162	
Q501	8-729-100-66	TRANSISTOR 2SC1623	
Q502	8-729-100-66	TRANSISTOR 2SC1623	
Q551	8-729-901-06	TRANSISTOR DTA144EK	
Q552	8-729-902-XX	TRANSISTOR DTC114TK	
Q553	8-729-902-XX	TRANSISTOR DTC114TK	
Q602	8-729-100-66	TRANSISTOR 2SC1623	
Q603	8-729-216-22	TRANSISTOR 2SA1162	
Q604	8-729-805-42	TRANSISTOR 2SC3859	
Q605	8-729-901-01	TRANSISTOR DTC144EK	
Q606	8-729-901-01	TRANSISTOR DTC144EK	
Q607	8-729-805-42	TRANSISTOR 2SC3859	
Q608	8-729-100-66	TRANSISTOR 2SC1623	

Ref.No	Part No.	Description	Remark
Q609	8-729-100-66	TRANSISTOR 2SC1623	
Q610	8-729-216-22	TRANSISTOR 2SA1162	
Q611	8-729-100-66	TRANSISTOR 2SC1623	
Q612	8-729-216-22	TRANSISTOR 2SA1162	
Q613	8-729-100-66	TRANSISTOR 2SC1623	
Q614	8-729-216-22	TRANSISTOR 2SA1162	
Q615	8-729-100-66	TRANSISTOR 2SC1623	
Q616	8-729-100-66	TRANSISTOR 2SC1623	
Q617	8-729-100-66	TRANSISTOR 2SC1623	
Q618	8-729-100-66	TRANSISTOR 2SC1623	
Q619	8-729-100-66	TRANSISTOR 2SC1623	
Q620	8-729-100-66	TRANSISTOR 2SC1623	
Q621	8-729-805-42	TRANSISTOR 2SC3859	
Q622	8-729-805-42	TRANSISTOR 2SC3859	
Q623	8-729-805-42	TRANSISTOR 2SC3859	
Q624	8-729-805-42	TRANSISTOR 2SC3859	
Q625	8-729-216-22	TRANSISTOR 2SA1162	
Q626	8-729-100-66	TRANSISTOR 2SC1623	
Q627	8-729-216-22	TRANSISTOR 2SA1162	
Q628	8-729-216-22	TRANSISTOR 2SA1162	
Q629	8-729-920-08	TRANSISTOR DTC124TK	
Q630	8-729-216-22	TRANSISTOR 2SA1162	
Q631	8-729-216-22	TRANSISTOR 2SA1162	
Q632	8-729-100-66	TRANSISTOR 2SC1623	
Q633	8-729-216-22	TRANSISTOR 2SA1162	
Q634	8-729-100-66	TRANSISTOR 2SC1623	
Q635	8-729-216-22	TRANSISTOR 2SA1162	
Q638	8-729-216-22	TRANSISTOR 2SA1162	
Q639	8-729-805-42	TRANSISTOR 2SC3859	
Q640	8-729-216-22	TRANSISTOR 2SA1162	
Q641	8-729-100-66	TRANSISTOR 2SC1623	
Q642	8-729-216-22	TRANSISTOR 2SA1162	
Q643	8-729-100-66	TRANSISTOR 2SC1623	
Q644	8-729-216-22	TRANSISTOR 2SA1162	
Q645	8-729-100-66	TRANSISTOR 2SC1623	
Q646	8-729-216-22	TRANSISTOR 2SA1162	
Q647	8-729-100-66	TRANSISTOR 2SC1623	
Q648	8-729-216-22	TRANSISTOR 2SA1162	
Q801	8-729-216-22	TRANSISTOR 2SA1162	
Q802	8-729-100-66	TRANSISTOR 2SC1623	
Q803	8-729-402-19	TRANSISTOR XN6501	
Q804	8-729-402-19	TRANSISTOR XN6501	
Q805	8-729-901-01	TRANSISTOR DTC144EK	
Q806	8-729-100-66	TRANSISTOR 2SC1623	
Q807	8-729-100-66	TRANSISTOR 2SC1623	
Q809	8-729-805-42	TRANSISTOR 2SC3859	
Q810	8-729-805-42	TRANSISTOR 2SC3859	
Q811	8-729-901-06	TRANSISTOR DTA144EK	
Q812	8-729-901-06	TRANSISTOR DTA144EK	
Q816	8-729-100-66	TRANSISTOR 2SC1623	
Q817	8-729-216-22	TRANSISTOR 2SA1162	
Q818	8-729-100-66	TRANSISTOR 2SC1623	
Q819	8-729-119-76	TRANSISTOR 2SB1175-HFE	

When indicating parts by reference number, please include the board name.

Ref.No	Part No.	Description	Remark
Q820	8-729-100-66	TRANSISTOR 2SC1623	
Q822	8-729-216-22	TRANSISTOR 2SA1162	
Q824	8-729-901-01	TRANSISTOR DTC144EK	
Q825	8-729-901-01	TRANSISTOR DTC144EK	
Q826	8-729-216-22	TRANSISTOR 2SA1162	
Q827	8-729-100-66	TRANSISTOR 2SC1623	
Q828	8-729-216-22	TRANSISTOR 2SA1162	
Q830	8-729-805-42	TRANSISTOR 2SC3859	

RESISTOR

Ref.No	Part No.	Description	Remark
R201	1-216-699-11	METAL CHIP 100K 0.50% 1/10W	
R202	1-216-073-00	METAL GLAZE 10K 5% 1/10W	
R203	1-216-089-00	METAL GLAZE 47K 5% 1/10W	
R204	1-216-089-00	METAL GLAZE 47K 5% 1/10W	
R205	1-216-295-00	METAL GLAZE 0 5% 1/10W	
R206	1-216-089-00	METAL GLAZE 47K 5% 1/10W	
R207	1-216-061-00	METAL GLAZE 3.3K 5% 1/10W	
R208	1-216-047-00	METAL GLAZE 820 5% 1/10W	
R209	1-216-079-00	METAL GLAZE 18K 5% 1/10W	
R210	1-216-067-00	METAL GLAZE 5.6K 5% 1/10W	
R211	1-216-304-11	METAL GLAZE 3.3 5% 1/10W	
R212	1-216-015-00	METAL GLAZE 39 5% 1/10W	(Australian, E)
R213	1-216-015-00	METAL GLAZE 39 5% 1/10W	(Australian, E)
R214	1-216-049-00	METAL GLAZE 1K 5% 1/10W	
R215	1-216-021-00	METAL GLAZE 68 5% 1/10W	
R216	1-216-049-00	METAL GLAZE 1K 5% 1/10W	
R218	1-216-097-00	METAL GLAZE 100K 5% 1/10W	
R219	1-216-053-00	METAL GLAZE 1.5K 5% 1/10W	
R220	1-216-081-00	METAL GLAZE 22K 5% 1/10W	
R221	1-216-295-00	METAL GLAZE 0 5% 1/10W	
R223	1-216-089-00	METAL GLAZE 47K 5% 1/10W	
R224	1-216-089-00	METAL GLAZE 47K 5% 1/10W	
R226	1-216-065-00	METAL GLAZE 4.7K 5% 1/10W	
R227	1-216-041-00	METAL GLAZE 470 5% 1/10W	
R231	1-216-121-00	METAL GLAZE 1M 5% 1/10W	
R232	1-216-029-00	METAL GLAZE 150 5% 1/10W	
R233	1-216-073-00	METAL GLAZE 10K 5% 1/10W	
R234	1-216-121-00	METAL GLAZE 1M 5% 1/10W	
R235	1-216-121-00	METAL GLAZE 1M 5% 1/10W	
R236	1-216-049-00	METAL GLAZE 1K 5% 1/10W	
R237	1-216-065-00	METAL GLAZE 4.7K 5% 1/10W	
R238	1-216-051-00	METAL GLAZE 1.2K 5% 1/10W	
R241	1-216-089-00	METAL GLAZE 47K 5% 1/10W	
R242	1-216-663-11	METAL CHIP 3.3K 0.50% 1/10W	
R243	1-216-073-00	METAL GLAZE 10K 5% 1/10W	
R246	1-216-651-11	METAL CHIP 1K 0.50% 1/10W	
R247	1-216-643-11	METAL CHIP 470 0.50% 1/10W	
R248	1-216-071-00	METAL GLAZE 8.2K 5% 1/10W	
R249	1-216-059-00	METAL GLAZE 2.7K 5% 1/10W	
R250	1-216-065-00	METAL GLAZE 4.7K 5% 1/10W	
R251	1-216-121-00	METAL GLAZE 1M 5% 1/10W	

Ref.No	Part No.	Description	Remark
R264	1-216-053-00	METAL GLAZE 1.5K 5% 1/10W	
R265	1-216-021-00	METAL GLAZE 68 5% 1/10W	
R266	1-216-083-00	METAL GLAZE 27K 5% 1/10W	
R267	1-216-061-00	METAL GLAZE 3.3K 5% 1/10W	
R268	1-216-057-00	METAL GLAZE 2.2K 5% 1/10W	
R270	1-216-057-00	METAL GLAZE 2.2K 5% 1/10W	
R271	1-216-049-00	METAL GLAZE 1K 5% 1/10W	
R274	1-216-063-00	METAL GLAZE 3.9K 5% 1/10W	
R275	1-216-053-00	METAL GLAZE 1.5K 5% 1/10W	
R276	1-216-113-00	METAL GLAZE 470K 5% 1/10W	
R277	1-216-081-00	METAL GLAZE 22K 5% 1/10W	
R279	1-216-295-00	METAL GLAZE 0 5% 1/10W	
R281	1-216-049-00	METAL GLAZE 1K 5% 1/10W	
R282	1-216-045-00	METAL GLAZE 680 5% 1/10W	
R283	1-216-073-00	METAL GLAZE 10K 5% 1/10W	
R284	1-216-063-00	METAL GLAZE 3.9K 5% 1/10W	
R285	1-216-057-00	METAL GLAZE 2.2K 5% 1/10W	
R287	1-216-053-00	METAL GLAZE 1.5K 5% 1/10W	
R288	1-216-081-00	METAL GLAZE 22K 5% 1/10W	
R289	1-216-055-00	METAL GLAZE 1.8K 5% 1/10W	
R290	1-216-041-00	METAL GLAZE 470 5% 1/10W	
R291	1-216-021-00	METAL GLAZE 68 5% 1/10W	
R292	1-216-049-00	METAL GLAZE 1K 5% 1/10W	
R293	1-216-079-00	METAL GLAZE 18K 5% 1/10W	
R294	1-216-079-00	METAL GLAZE 18K 5% 1/10W	
R295	1-216-295-00	METAL GLAZE 0 5% 1/10W	
R296	1-216-049-00	METAL GLAZE 1K 5% 1/10W	
R297	1-216-055-00	METAL GLAZE 1.8K 5% 1/10W	
R298	1-216-081-00	METAL GLAZE 22K 5% 1/10W	
R299	1-216-069-00	METAL GLAZE 6.8K 5% 1/10W	
R300	1-216-085-00	METAL GLAZE 33K 5% 1/10W	
R301	1-216-043-00	METAL GLAZE 560 5% 1/10W	
R302	1-216-037-00	METAL GLAZE 330 5% 1/10W	
R303	1-216-057-00	METAL GLAZE 2.2K 5% 1/10W	
R304	1-216-053-00	METAL GLAZE 1.5K 5% 1/10W	
R305	1-216-027-00	METAL GLAZE 120 5% 1/10W	
R306	1-216-045-00	METAL GLAZE 680 5% 1/10W	
R307	1-216-033-00	METAL GLAZE 220 5% 1/10W	
R309	1-216-073-00	METAL GLAZE 10K 5% 1/10W	
R310	1-216-073-00	METAL GLAZE 10K 5% 1/10W	
R311	1-216-057-00	METAL GLAZE 2.2K 5% 1/10W	
R312	1-216-041-00	METAL GLAZE 470 5% 1/10W	
R313	1-216-025-00	METAL GLAZE 100 5% 1/10W	
R314	1-216-041-00	METAL GLAZE 470 5% 1/10W	
R315	1-216-041-00	METAL GLAZE 470 5% 1/10W	
R316	1-216-073-00	METAL GLAZE 10K 5% 1/10W	
R317	1-216-071-00	METAL GLAZE 8.2K 5% 1/10W	
R318	1-216-043-00	METAL GLAZE 560 5% 1/10W	
R319	1-216-043-00	METAL GLAZE 560 5% 1/10W	
R320	1-216-083-00	METAL GLAZE 27K 5% 1/10W	
R321	1-216-057-00	METAL GLAZE 2.2K 5% 1/10W	
R322	1-216-065-00	METAL GLAZE 4.7K 5% 1/10W	
R323	1-216-057-00	METAL GLAZE 2.2K 5% 1/10W	

When indicating parts by reference number, please include the board name.

Ref.No	Part No.	Description	Remark
R324	1-216-025-00	METAL GLAZE 100 5% 1/10W	
R325	1-216-065-00	METAL GLAZE 4.7K 5% 1/10W	
R327	1-216-055-00	METAL GLAZE 1.8K 5% 1/10W	
R348	1-216-073-00	METAL GLAZE 10K 5% 1/10W	
R351	1-216-049-00	METAL GLAZE 1K 5% 1/10W	
R355	1-216-065-00	METAL GLAZE 4.7K 5% 1/10W	
R356	1-216-051-00	METAL GLAZE 1.2K 5% 1/10W	
R357	1-216-295-00	METAL GLAZE 0 5% 1/10W	
R369	1-216-079-00	METAL GLAZE 18K 5% 1/10W	
R376	1-216-073-00	METAL GLAZE 10K 5% 1/10W	
R377	1-216-073-00	METAL GLAZE 10K 5% 1/10W	
R378	1-216-089-00	METAL GLAZE 47K 5% 1/10W	
R380	1-216-049-00	METAL GLAZE 1K 5% 1/10W	
R381	1-216-049-00	METAL GLAZE 1K 5% 1/10W	
R383	1-216-045-00	METAL GLAZE 680 5% 1/10W	
R384	1-216-055-00	METAL GLAZE 1.8K 5% 1/10W	
R385	1-216-045-00	METAL GLAZE 680 5% 1/10W	
R389	1-216-049-00	METAL GLAZE 1K 5% 1/10W	
R395	1-216-049-00	METAL GLAZE 1K 5% 1/10W	
R396	1-216-033-00	METAL GLAZE 220 5% 1/10W	
R398	1-216-097-00	METAL GLAZE 100K 5% 1/10W	
R399	1-216-069-00	METAL GLAZE 6.8K 5% 1/10W	
R401	1-216-031-00	METAL GLAZE 180 5% 1/10W	
R402	1-216-073-00	METAL GLAZE 10K 5% 1/10W	
R403	1-216-057-00	METAL GLAZE 2.2K 5% 1/10W	
R404	1-216-049-00	METAL GLAZE 1K 5% 1/10W	
R405	1-216-073-00	METAL GLAZE 10K 5% 1/10W	
R406	1-216-049-00	METAL GLAZE 1K 5% 1/10W	
R407	1-216-049-00	METAL GLAZE 1K 5% 1/10W	
R408	1-216-065-00	METAL GLAZE 4.7K 5% 1/10W	
R409	1-216-043-00	METAL GLAZE 560 5% 1/10W	
R410	1-216-057-00	METAL GLAZE 2.2K 5% 1/10W	
R411	1-216-033-00	METAL GLAZE 220 5% 1/10W	
R413	1-216-049-00	METAL GLAZE 1K 5% 1/10W	
R414	1-216-057-00	METAL GLAZE 2.2K 5% 1/10W	
R415	1-216-121-00	METAL GLAZE 1M 5% 1/10W	
R416	1-216-057-00	METAL GLAZE 2.2K 5% 1/10W	
R417	1-216-073-00	METAL GLAZE 10K 5% 1/10W	
R418	1-216-073-00	METAL GLAZE 10K 5% 1/10W	
R419	1-216-047-00	METAL GLAZE 820 5% 1/10W	
R420	1-216-047-00	METAL GLAZE 820 5% 1/10W	
R421	1-216-061-00	METAL GLAZE 3.3K 5% 1/10W	
R422	1-216-067-00	METAL GLAZE 5.6K 5% 1/10W	
R424	1-216-045-00	METAL GLAZE 680 5% 1/10W	
R425	1-216-069-00	METAL GLAZE 6.8K 5% 1/10W	
R426	1-216-059-00	METAL GLAZE 2.7K 5% 1/10W	
R427	1-216-049-00	METAL GLAZE 1K 5% 1/10W	
R428	1-216-051-00	METAL GLAZE 1.2K 5% 1/10W	
R429	1-216-065-00	METAL GLAZE 4.7K 5% 1/10W	
R430	1-216-053-00	METAL GLAZE 1.5K 5% 1/10W	
R431	1-216-045-00	METAL GLAZE 680 5% 1/10W	
R432	1-216-109-00	METAL GLAZE 330K 5% 1/10W	
R433	1-216-099-00	METAL GLAZE 120K 5% 1/10W	

Ref.No	Part No.	Description	Remark
R451	1-216-121-00	METAL GLAZE 1M 5% 1/10W	
R452	1-216-037-00	METAL GLAZE 330 5% 1/10W	
R501	1-216-057-00	METAL GLAZE 2.2K 5% 1/10W	
R502	1-216-073-00	METAL GLAZE 10K 5% 1/10W	
R503	1-216-073-00	METAL GLAZE 10K 5% 1/10W	
R504	1-216-073-00	METAL GLAZE 10K 5% 1/10W	
R505	1-216-089-00	METAL GLAZE 47K 5% 1/10W	
R506	1-216-097-00	METAL GLAZE 100K 5% 1/10W	
R507	1-216-089-00	METAL GLAZE 47K 5% 1/10W	
R508	1-216-075-00	METAL GLAZE 12K 5% 1/10W	
R509	1-216-063-00	METAL GLAZE 3.9K 5% 1/10W	
R510	1-216-057-00	METAL GLAZE 2.2K 5% 1/10W	
R511	1-216-091-00	METAL GLAZE 56K 5% 1/10W	
R512	1-216-065-00	METAL GLAZE 4.7K 5% 1/10W	
R513	1-216-073-00	METAL GLAZE 10K 5% 1/10W	
R514	1-216-065-00	METAL GLAZE 4.7K 5% 1/10W	
R515	1-216-065-00	METAL GLAZE 4.7K 5% 1/10W	
R516	1-216-083-00	METAL GLAZE 27K 5% 1/10W	
R517	1-216-073-00	METAL GLAZE 10K 5% 1/10W	
R518	1-216-085-00	METAL GLAZE 33K 5% 1/10W	
R519	1-216-097-00	METAL GLAZE 100K 5% 1/10W	
R520	1-216-097-00	METAL GLAZE 100K 5% 1/10W	
R521	1-216-097-00	METAL GLAZE 100K 5% 1/10W	
R522	1-216-073-00	METAL GLAZE 10K 5% 1/10W	
R523	1-216-057-00	METAL GLAZE 2.2K 5% 1/10W	
R524	1-216-057-00	METAL GLAZE 2.2K 5% 1/10W	
R525	1-216-097-00	METAL GLAZE 100K 5% 1/10W	
R551	1-216-097-00	METAL GLAZE 100K 5% 1/10W	
R552	1-216-073-00	METAL GLAZE 10K 5% 1/10W	
R553	1-216-097-00	METAL GLAZE 100K 5% 1/10W	
R554	1-216-073-00	METAL GLAZE 10K 5% 1/10W	
R603	1-216-053-00	METAL GLAZE 1.5K 5% 1/10W	
R604	1-216-059-00	METAL GLAZE 2.7K 5% 1/10W	
R605	1-216-059-00	METAL GLAZE 2.7K 5% 1/10W	
R606	1-216-073-00	METAL GLAZE 10K 5% 1/10W	
R607	1-216-049-00	METAL GLAZE 1K 5% 1/10W	
R608	1-216-049-00	METAL GLAZE 1K 5% 1/10W	
R609	1-216-073-00	METAL GLAZE 10K 5% 1/10W	
R610	1-216-049-00	METAL GLAZE 1K 5% 1/10W	
R611	1-216-049-00	METAL GLAZE 1K 5% 1/10W	
R612	1-216-073-00	METAL GLAZE 10K 5% 1/10W	
R613	1-216-049-00	METAL GLAZE 1K 5% 1/10W	
R614	1-216-049-00	METAL GLAZE 1K 5% 1/10W	
R615	1-216-049-00	METAL GLAZE 1K 5% 1/10W	
R616	1-216-049-00	METAL GLAZE 1K 5% 1/10W	
R617	1-216-134-00	METAL GLAZE 2.2 5% 1/8W	
R618	1-216-071-00	METAL GLAZE 8.2K 5% 1/10W	
R619	1-216-097-00	METAL GLAZE 100K 5% 1/10W	
R620	1-216-097-00	METAL GLAZE 100K 5% 1/10W	
R621	1-216-097-00	METAL GLAZE 100K 5% 1/10W	
R622	1-216-073-00	METAL GLAZE 10K 5% 1/10W	
R623	1-216-097-00	METAL GLAZE 100K 5% 1/10W	
R624	1-216-073-00	METAL GLAZE 10K 5% 1/10W	

When indicating parts by reference number, please include the board name.

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Ref.No	Part No.	Description				Remark
R625	1-216-059-00	METAL GLAZE	2.7K	5%	1/10W	
R626	1-216-068-00	METAL GLAZE	6.2K	5%	1/10W	
R627	1-216-065-00	METAL GLAZE	4.7K	5%	1/10W	
R628	1-216-073-00	METAL GLAZE	10K	5%	1/10W	
R629	1-216-073-00	METAL GLAZE	10K	5%	1/10W	
R630	1-216-079-00	METAL GLAZE	18K	5%	1/10W	
R631	1-216-031-00	METAL GLAZE	180	5%	1/10W	
R632	1-216-077-00	METAL GLAZE	15K	5%	1/10W	
R633	1-216-057-00	METAL GLAZE	2.2K	5%	1/10W	
R634	1-216-057-00	METAL GLAZE	2.2K	5%	1/10W	
R635	1-216-049-00	METAL GLAZE	1K	5%	1/10W	
R636	1-216-097-00	METAL GLAZE	100K	5%	1/10W	
R637	1-216-081-00	METAL GLAZE	22K	5%	1/10W	
R638	1-216-097-00	METAL GLAZE	100K	5%	1/10W	
R639	1-216-049-00	METAL GLAZE	1K	5%	1/10W	
R640	1-216-097-00	METAL GLAZE	100K	5%	1/10W	
R641	1-216-057-00	METAL GLAZE	2.2K	5%	1/10W	
R642	1-216-057-00	METAL GLAZE	2.2K	5%	1/10W	
R643	1-216-057-00	METAL GLAZE	2.2K	5%	1/10W	
R644	1-216-057-00	METAL GLAZE	2.2K	5%	1/10W	
R645	1-216-049-00	METAL GLAZE	1K	5%	1/10W	
R646	1-216-049-00	METAL GLAZE	1K	5%	1/10W	
R647	1-216-055-00	METAL GLAZE	1.8K	5%	1/10W	
R648	1-216-049-00	METAL GLAZE	1K	5%	1/10W	
R649	1-216-049-00	METAL GLAZE	1K	5%	1/10W	
R650	1-216-057-00	METAL GLAZE	2.2K	5%	1/10W	
R651	1-216-103-00	METAL GLAZE	180K	5%	1/10W	
R652	1-216-049-00	METAL GLAZE	1K	5%	1/10W	
R653	1-216-057-00	METAL GLAZE	2.2K	5%	1/10W	
R654	1-216-071-00	METAL GLAZE	8.2K	5%	1/10W	
R655	1-216-748-11	METAL GLAZE	39K	5%	1/10W	
R656	1-216-081-00	METAL GLAZE	22K	5%	1/10W	
R657	1-216-748-11	METAL GLAZE	39K	5%	1/10W	
R658	1-216-057-00	METAL GLAZE	2.2K	5%	1/10W	
R659	1-216-033-00	METAL GLAZE	220	5%	1/10W	
R660	1-216-049-00	METAL GLAZE	1K	5%	1/10W	
R661	1-216-085-00	METAL GLAZE	33K	5%	1/10W	
R662	1-216-049-00	METAL GLAZE	1K	5%	1/10W	
R663	1-216-073-00	METAL GLAZE	10K	5%	1/10W	
R664	1-216-073-00	METAL GLAZE	10K	5%	1/10W	
R667	1-216-131-11	METAL GLAZE	2.7M	5%	1/10W	
R668	1-216-025-00	METAL GLAZE	100	5%	1/10W	
R669	1-216-093-00	METAL GLAZE	68K	5%	1/10W	
R670	1-216-073-00	METAL GLAZE	10K	5%	1/10W	
R671	1-216-748-11	METAL GLAZE	39K	5%	1/10W	
R672	1-216-097-00	METAL GLAZE	100K	5%	1/10W	
R673	1-216-077-00	METAL GLAZE	15K	5%	1/10W	
R674	1-216-073-00	METAL GLAZE	10K	5%	1/10W	
R675	1-216-073-00	METAL GLAZE	10K	5%	1/10W	
R676	1-216-049-00	METAL GLAZE	1K	5%	1/10W	
R677	1-216-073-00	METAL GLAZE	10K	5%	1/10W	
R678	1-216-053-00	METAL GLAZE	1.5K	5%	1/10W	
R679	1-216-057-00	METAL GLAZE	2.2K	5%	1/10W	

Ref.No	Part No.	Description				Remark
R680	1-216-025-00	METAL GLAZE	100	5%	1/10W	
R681	1-216-073-00	METAL GLAZE	10K	5%	1/10W	
R682	1-216-073-00	METAL GLAZE	10K	5%	1/10W	
R683	1-216-067-00	METAL GLAZE	5.6K	5%	1/10W	
R685	1-216-079-00	METAL GLAZE	18K	5%	1/10W	
R686	1-216-049-00	METAL GLAZE	1K	5%	1/10W	
R687	1-216-041-00	METAL GLAZE	470	5%	1/10W	
R688	1-216-055-00	METAL GLAZE	1.8K	5%	1/10W	
R690	1-216-057-00	METAL GLAZE	2.2K	5%	1/10W	
R696	1-216-073-00	METAL GLAZE	10K	5%	1/10W	
R697	1-216-055-00	METAL GLAZE	1.8K	5%	1/10W	
R698	1-216-065-00	METAL GLAZE	4.7K	5%	1/10W	
R699	1-216-099-00	METAL GLAZE	120K	5%	1/10W	
R700	1-216-057-00	METAL GLAZE	2.2K	5%	1/10W	
R701	1-216-065-00	METAL GLAZE	4.7K	5%	1/10W	
R702	1-216-073-00	METAL GLAZE	10K	5%	1/10W	
R703	1-216-073-00	METAL GLAZE	10K	5%	1/10W	
R704	1-216-065-00	METAL GLAZE	4.7K	5%	1/10W	
R705	1-216-097-00	METAL GLAZE	100K	5%	1/10W	
R706	1-216-053-00	METAL GLAZE	1.5K	5%	1/10W	
R707	1-216-055-00	METAL GLAZE	1.8K	5%	1/10W	
R708	1-216-049-00	METAL GLAZE	1K	5%	1/10W	
R709	1-216-061-00	METAL GLAZE	3.3K	5%	1/10W	
R710	1-216-073-00	METAL GLAZE	10K	5%	1/10W	
R711	1-216-057-00	METAL GLAZE	2.2K	5%	1/10W	
R712	1-216-049-00	METAL GLAZE	1K	5%	1/10W	
R713	1-216-748-11	METAL GLAZE	39K	5%	1/10W	
R714	1-216-079-00	METAL GLAZE	18K	5%	1/10W	
R715	1-216-075-00	METAL GLAZE	12K	5%	1/10W	
R716	1-216-057-00	METAL GLAZE	2.2K	5%	1/10W	
R717	1-216-049-00	METAL GLAZE	1K	5%	1/10W	
R718	1-216-045-00	METAL GLAZE	680	5%	1/10W	
R719	1-216-075-00	METAL GLAZE	12K	5%	1/10W	
R720	1-216-077-00	METAL GLAZE	15K	5%	1/10W	
R721	1-216-079-00	METAL GLAZE	18K	5%	1/10W	
R722	1-216-081-00	METAL GLAZE	22K	5%	1/10W	
R723	1-216-079-00	METAL GLAZE	18K	5%	1/10W	
R724	1-216-077-00	METAL GLAZE	15K	5%	1/10W	
R725	1-216-049-00	METAL GLAZE	1K	5%	1/10W	
R726	1-216-051-00	METAL GLAZE	1.2K	5%	1/10W	
R727	1-216-049-00	METAL GLAZE	1K	5%	1/10W	
R728	1-216-069-00	METAL GLAZE	6.8K	5%	1/10W	
R729	1-216-039-00	METAL GLAZE	390	5%	1/10W	
R730	1-216-067-00	METAL GLAZE	5.6K	5%	1/10W	
R731	1-216-049-00	METAL GLAZE	1K	5%	1/10W	
R732	1-216-075-00	METAL GLAZE	12K	5%	1/10W	
R733	1-216-091-00	METAL GLAZE	56K	5%	1/10W	
R734	1-216-079-00	METAL GLAZE	18K	5%	1/10W	
R735	1-216-061-00	METAL GLAZE	3.3K	5%	1/10W	
R736	1-216-065-00	METAL GLAZE	4.7K	5%	1/10W	
R737	1-216-081-00	METAL GLAZE	22K	5%	1/10W	
R738	1-216-073-00	METAL GLAZE	10K	5%	1/10W	
R739	1-216-071-00	METAL GLAZE	8.2K	5%	1/10W	

When indicating parts by reference number, please include the board name.

Ref.No	Part No.	Description				Remark
R740	1-216-091-00	METAL GLAZE	56K	5%	1/10W	
R741	1-216-093-00	METAL GLAZE	68K	5%	1/10W	
R742	1-216-061-00	METAL GLAZE	3.3K	5%	1/10W	
R744	1-216-089-00	METAL GLAZE	47K	5%	1/10W	
R745	1-216-748-11	METAL GLAZE	39K	5%	1/10W	
R746	1-216-081-00	METAL GLAZE	22K	5%	1/10W	
R747	1-216-085-00	METAL GLAZE	33K	5%	1/10W	
R749	1-216-121-00	METAL GLAZE	1M	5%	1/10W	
R750	1-216-103-00	METAL GLAZE	180K	5%	1/10W	
R751	1-216-097-00	METAL GLAZE	100K	5%	1/10W	
R752	1-216-047-00	METAL GLAZE	820	5%	1/10W	
R753	1-216-073-00	METAL GLAZE	10K	5%	1/10W	
R754	1-216-085-00	METAL GLAZE	33K	5%	1/10W	
R755	1-216-073-00	METAL GLAZE	10K	5%	1/10W	
R757	1-216-073-00	METAL GLAZE	10K	5%	1/10W	
R758	1-216-047-00	METAL GLAZE	820	5%	1/10W	
R759	1-216-072-00	METAL GLAZE	9.1K	5%	1/10W	
R760	1-216-051-00	METAL GLAZE	1.2K	5%	1/10W	
R761	1-216-073-00	METAL GLAZE	10K	5%	1/10W	
R762	1-216-049-00	METAL GLAZE	1K	5%	1/10W	
R763	1-216-057-00	METAL GLAZE	2.2K	5%	1/10W	
R764	1-216-065-00	METAL GLAZE	4.7K	5%	1/10W	
R765	1-216-065-00	METAL GLAZE	4.7K	5%	1/10W	
R766	1-216-049-00	METAL GLAZE	1K	5%	1/10W	
R767	1-216-051-00	METAL GLAZE	1.2K	5%	1/10W	
R768	1-216-073-00	METAL GLAZE	10K	5%	1/10W	
R769	1-216-083-00	METAL GLAZE	27K	5%	1/10W	
R770	1-216-085-00	METAL GLAZE	33K	5%	1/10W	
R771	1-216-057-00	METAL GLAZE	2.2K	5%	1/10W	
R772	1-216-071-00	METAL GLAZE	8.2K	5%	1/10W	
R773	1-216-091-00	METAL GLAZE	56K	5%	1/10W	
R774	1-216-089-00	METAL GLAZE	47K	5%	1/10W	
R776	1-216-061-00	METAL GLAZE	3.3K	5%	1/10W	
R777	1-216-073-00	METAL GLAZE	10K	5%	1/10W	
R780	1-216-089-00	METAL GLAZE	47K	5%	1/10W	
R781	1-216-057-00	METAL GLAZE	2.2K	5%	1/10W	
R782	1-216-057-00	METAL GLAZE	2.2K	5%	1/10W	
R783	1-216-057-00	METAL GLAZE	2.2K	5%	1/10W	
R785	1-216-049-00	METAL GLAZE	1K	5%	1/10W	
R786	1-216-057-00	METAL GLAZE	2.2K	5%	1/10W	
R793	1-216-049-00	METAL GLAZE	1K	5%	1/10W	
R794	1-216-043-00	METAL GLAZE	560	5%	1/10W	
R801	1-216-061-00	METAL GLAZE	3.3K	5%	1/10W	
R802	1-216-083-00	METAL GLAZE	27K	5%	1/10W	
R803	1-216-073-00	METAL GLAZE	10K	5%	1/10W	
R804	1-216-073-00	METAL GLAZE	10K	5%	1/10W	
R805	1-216-073-00	METAL GLAZE	10K	5%	1/10W	
R806	1-216-049-00	METAL GLAZE	1K	5%	1/10W	
R807	1-216-081-00	METAL GLAZE	22K	5%	1/10W	
R808	1-216-043-00	METAL GLAZE	560	5%	1/10W	
R809	1-216-081-00	METAL GLAZE	22K	5%	1/10W	
R810	1-216-043-00	METAL GLAZE	560	5%	1/10W	
R811	1-216-051-00	METAL GLAZE	1.2K	5%	1/10W	
R812	1-216-033-00	METAL GLAZE	220	5%	1/10W	
R813	1-216-134-00	METAL GLAZE	2.2	5%	1/8W	
R814	1-216-061-00	METAL GLAZE	3.3K	5%	1/10W	
R815	1-216-023-00	METAL GLAZE	82	5%	1/10W	
R816	1-216-057-00	METAL GLAZE	2.2K	5%	1/10W	
R817	1-216-081-00	METAL GLAZE	22K	5%	1/10W	
R818	1-216-049-00	METAL GLAZE	1K	5%	1/10W	
R819	1-216-057-00	METAL GLAZE	2.2K	5%	1/10W	
R820	1-216-045-00	METAL GLAZE	680	5%	1/10W	
R821	1-216-095-00	METAL GLAZE	82K	5%	1/10W	
R822	1-216-057-00	METAL GLAZE	2.2K	5%	1/10W	
R823	1-216-073-00	METAL GLAZE	10K	5%	1/10W	
R824	1-216-073-00	METAL GLAZE	10K	5%	1/10W	
R825	1-216-093-00	METAL GLAZE	68K	5%	1/10W	
R826	1-216-748-11	METAL GLAZE	39K	5%	1/10W	
R827	1-216-113-00	METAL GLAZE	470K	5%	1/10W	
R828	1-216-065-00	METAL GLAZE	4.7K	5%	1/10W	
R829	1-216-121-00	METAL GLAZE	1M	5%	1/10W	
R831	1-216-073-00	METAL GLAZE	10K	5%	1/10W	
R832	1-216-049-00	METAL GLAZE	1K	5%	1/10W	
R833	1-216-073-00	METAL GLAZE	10K	5%	1/10W	
R836	1-216-073-00	METAL GLAZE	10K	5%	1/10W	
R837	1-216-097-00	METAL GLAZE	100K	5%	1/10W	
R838	1-216-097-00	METAL GLAZE	100K	5%	1/10W	
R839	1-216-043-00	METAL GLAZE	560	5%	1/10W	
R840	1-216-057-00	METAL GLAZE	2.2K	5%	1/10W	
R841	1-216-057-00	METAL GLAZE	2.2K	5%	1/10W	
R843	1-216-057-00	METAL GLAZE	2.2K	5%	1/10W	
R844	1-216-057-00	METAL GLAZE	2.2K	5%	1/10W	
R845	1-216-063-00	METAL GLAZE	3.9K	5%	1/10W	
R846	1-216-033-00	METAL GLAZE	220	5%	1/10W	
R847	1-216-033-00	METAL GLAZE	220	5%	1/10W	
R848	1-216-033-00	METAL GLAZE	220	5%	1/10W	
R849	1-216-144-00	METAL GLAZE	5.6	5%	1/8W	
R850	1-216-134-00	METAL GLAZE	2.2	5%	1/8W	
R857	1-216-069-00	METAL GLAZE	6.8K	5%	1/10W	
R858	1-216-067-00	METAL GLAZE	5.6K	5%	1/10W	
R859	1-216-067-00	METAL GLAZE	5.6K	5%	1/10W	
R860	1-216-748-11	METAL GLAZE	39K	5%	1/10W	
R861	1-216-073-00	METAL GLAZE	10K	5%	1/10W	
R862	1-216-073-00	METAL GLAZE	10K	5%	1/10W	
R863	1-216-091-00	METAL GLAZE	56K	5%	1/10W	
R864	1-216-083-00	METAL GLAZE	27K	5%	1/10W	
R865	1-216-091-00	METAL GLAZE	56K	5%	1/10W	
R866	1-216-097-00	METAL GLAZE	100K	5%	1/10W	
R867	1-216-105-00	METAL GLAZE	220K	5%	1/10W	
R868	1-216-071-00	METAL GLAZE	8.2K	5%	1/10W	
R869	1-216-073-00	METAL GLAZE	10K	5%	1/10W	
R870	1-216-081-00	METAL GLAZE	22K	5%	1/10W	
R871	1-216-295-00	METAL GLAZE	0	5%	1/10W	
R872	1-216-073-00	METAL GLAZE	10K	5%	1/10W	
R873	1-216-025-00	METAL GLAZE	100	5%	1/10W	
R874	1-216-093-00	METAL GLAZE	68K	5%	1/10W	

When indicating parts by reference number, please include the board name.

Ref.No	Part No.	Description	Remark
R875	1-216-049-00	METAL GLAZE 1K 5% 1/10W	
R876	1-216-101-00	METAL GLAZE 150K 5% 1/10W	
R877	1-216-065-00	METAL GLAZE 4.7K 5% 1/10W	
R878	1-216-748-11	METAL GLAZE 39K 5% 1/10W	
R879	1-216-121-00	METAL GLAZE 1M 5% 1/10W	
R880	1-216-025-00	METAL GLAZE 100 5% 1/10W	
R881	1-216-085-00	METAL GLAZE 33K 5% 1/10W	
R882	1-216-077-00	METAL GLAZE 15K 5% 1/10W	
R883	1-216-053-00	METAL GLAZE 1.5K 5% 1/10W	
R884	1-216-097-00	METAL GLAZE 100K 5% 1/10W	
R885	1-216-099-00	METAL GLAZE 120K 5% 1/10W	
R886	1-216-121-00	METAL GLAZE 1M 5% 1/10W	
R887	1-216-073-00	METAL GLAZE 10K 5% 1/10W	
R888	1-216-049-00	METAL GLAZE 1K 5% 1/10W	
R889	1-216-073-00	METAL GLAZE 10K 5% 1/10W	
R890	1-216-144-00	METAL GLAZE 5.6 5% 1/8W	
R891	1-216-073-00	METAL GLAZE 10K 5% 1/10W	
R892	1-216-073-00	METAL GLAZE 10K 5% 1/10W	
R893	1-216-121-00	METAL GLAZE 1M 5% 1/10W	
R894	1-216-748-11	METAL GLAZE 39K 5% 1/10W	
R895	1-216-077-00	METAL GLAZE 15K 5% 1/10W	
R896	1-216-295-00	METAL GLAZE 0 5% 1/10W	
R897	1-216-295-00	METAL GLAZE 0 5% 1/10W	
R898	1-216-073-00	METAL GLAZE 10K 5% 1/10W	
R899	1-216-059-00	METAL GLAZE 2.7K 5% 1/10W	

VARIABLE RESISTOR

Ref.No	Part No.	Description
RV201	1-230-874-11	RES, ADJ, METAL GLAZE 100K
RV202	1-230-870-11	RES, ADJ, METAL GLAZE 10K
RV203	1-230-874-11	RES, ADJ, METAL GLAZE 100K
RV204	1-230-868-11	RES, ADJ, METAL GLAZE 2.2K
RV205	1-230-869-11	RES, ADJ, METAL GLAZE 4.7K
RV207	1-230-868-11	RES, ADJ, METAL GLAZE 2.2K
RV208	1-230-866-11	RES, ADJ, METAL GLAZE 470
RV401	1-230-868-11	RES, ADJ, METAL GLAZE 2.2K
RV402	1-230-867-11	RES, ADJ, METAL GLAZE 1K
RV403	1-230-868-11	RES, ADJ, METAL GLAZE 2.2K
RV552	1-230-874-11	RES, ADJ, METAL GLAZE 100K
RV801	1-230-875-21	RES, ADJ, METAL GLAZE 220K

CRYSTAL

Ref.No	Part No.	Description
X201	1-577-117-21	VIBRATOR, CRYSTAL (4.43MHz)
X601	1-577-118-11	VIBRATOR, LITHIUM NIOBATE (4MHz)
X602	1-567-733-11	VIBRATOR, CRYSTAL (17MHz)
X603	1-577-119-11	OSCILLATOR, CRYSTAL (28MHz)

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Ref.No	Part No.	Description	Remark
	*A-7051-959-A	PJ-20 BOARD, COMPLETE (Ref.No 4,000 Series) **********************	

CAPACITOR

Ref.No	Part No.	Description	Remark
C101	1-164-232-11	CERAMIC CHIP 0.01MF	50V
C102	1-124-778-00	ELECT CHIP 22MF 20%	6.3V
C103	1-163-118-00	CERAMIC CHIP 110PF 5%	50V
C104	1-163-009-11	CERAMIC CHIP 0.001MF 10%	50V
C105	1-163-009-11	CERAMIC CHIP 0.001MF 10%	50V
C106	1-126-603-11	ELECT CHIP 4.7MF 20%	35V
C107	1-126-603-11	ELECT CHIP 4.7MF 20%	35V
C108	1-164-232-11	CERAMIC CHIP 0.01MF 10%	50V
C109	1-163-009-11	CERAMIC CHIP 0.001MF 10%	50V
C110	1-164-232-11	CERAMIC CHIP 0.01MF	50V
C111	1-126-193-11	ELECT CHIP 1MF 20%	50V
C112	1-163-117-00	CERAMIC CHIP 100PF 5%	50V
C113	1-163-131-00	CERAMIC CHIP 390PF 5%	50V
C114	1-163-093-00	CERAMIC CHIP 10PF 5%	50V
C115	1-163-086-00	CERAMIC CHIP 3PF 0.25PF	50V
C116	1-164-232-11	CERAMIC CHIP 0.01MF	50V
C117	1-163-109-00	CERAMIC CHIP 47PF 5%	50V
C118	1-163-033-00	CERAMIC CHIP 0.022MF	50V
C119	1-163-033-00	CERAMIC CHIP 0.022MF	50V
C120	1-164-232-11	CERAMIC CHIP 0.01MF	50V
C121	1-163-131-00	CERAMIC CHIP 390PF 5%	50V
C122	1-163-033-00	CERAMIC CHIP 0.022MF	50V
C123	1-163-038-00	CERAMIC CHIP 0.1MF	25V
C124	1-164-182-11	CERAMIC CHIP 0.0033MF 10%	50V
C125	1-163-038-00	CERAMIC CHIP 0.1MF	25V
C126	1-164-232-11	CERAMIC CHIP 0.01MF	50V
C127	1-163-038-00	CERAMIC CHIP 0.1MF	25V
C128	1-124-779-00	ELECT CHIP 10MF 20%	16V

CONNECTOR

Ref.No	Part No.	Description
CN202	*1-565-882-11	PIN, CONNECTOR (PC BOARD) 10P

DIODE

Ref.No	Part No.	Description
D101	8-719-400-18	DIODE MA152WK
D102	8-719-800-76	DIODE 1SS226
D103	8-719-400-18	DIODE MA152WK
D104	8-719-400-18	DIODE MA152WK

DELAY LINE

Ref.No	Part No.	Description
DL101	1-415-593-11	DELAY LINE, ULTRASONIC GLASS

FILTER

Ref.No	Part No.	Description
FL101	1-236-188-11	FILTER, BAND PASS

IC

Ref.No	Part No.	Description
IC101	8-759-605-61	IC CXA1203N

When indicating parts by reference number, please include the board name.

COIL

Ref.No	Part No.	Description		Remark
L101	1-412-031-11	INDUCTOR CHIP	47UH	
L102	1-412-032-11	INDUCTOR CHIP	100UH	
L103	1-410-383-31	INDUCTOR CHIP	15UH	
L104	1-410-385-11	INDUCTOR CHIP	22UH	

TRANSISTOR

Ref.No	Part No.	Description	Remark
Q101	8-729-901-01	TRANSISTOR DTC144EK	
Q102	8-729-901-06	TRANSISTOR DTA144EK	
Q103	8-729-100-66	TRANSISTOR 2SC1623	
Q104	8-729-100-66	TRANSISTOR 2SC1623	
Q105	8-729-100-66	TRANSISTOR 2SC1623	
Q106	8-729-100-66	TRANSISTOR 2SC1623	
Q107	8-729-100-66	TRANSISTOR 2SC1623	
Q108	8-729-100-66	TRANSISTOR 2SC1623	
Q109	8-729-100-66	TRANSISTOR 2SC1623	
Q110	8-729-100-66	TRANSISTOR 2SC1623	
Q111	8-729-901-06	TRANSISTOR DTA144EK	
Q112	8-729-900-99	TRANSISTOR DTA144WK	
Q113	8-729-901-01	TRANSISTOR DTC144EK	

RESISTOR

Ref.No	Part No.	Description				Remark
R101	1-216-071-00	METAL GLAZE	8.2K	5%	1/10W	
R102	1-216-065-00	METAL GLAZE	4.7K	5%	1/10W	
R103	1-216-061-00	METAL GLAZE	3.3K	5%	1/10W	
R104	1-216-699-11	METAL CHIP	100K	0.50%	1/10W	
R105	1-216-065-00	METAL GLAZE	4.7K	5%	1/10W	
R106	1-216-065-00	METAL GLAZE	4.7K	5%	1/10W	
R107	1-216-097-00	METAL GLAZE	100K	5%	1/10W	
R108	1-216-049-00	METAL GLAZE	1K	5%	1/10W	
R109	1-216-049-00	METAL GLAZE	1K	5%	1/10W	
R110	1-216-057-00	METAL GLAZE	2.2K	5%	1/10W	
R111	1-216-097-00	METAL GLAZE	100K	5%	1/10W	
R112	1-216-097-00	METAL GLAZE	100K	5%	1/10W	
R113	1-216-097-00	METAL GLAZE	100K	5%	1/10W	
R114	1-216-049-00	METAL GLAZE	1K	5%	1/10W	
R116	1-216-049-00	METAL GLAZE	1K	5%	1/10W	
R117	1-216-077-00	METAL GLAZE	15K	5%	1/10W	
R118	1-216-041-00	METAL GLAZE	470	5%	1/10W	
R119	1-216-033-00	METAL GLAZE	220	5%	1/10W	
R120	1-216-049-00	METAL GLAZE	1K	5%	1/10W	
R121	1-216-073-00	METAL GLAZE	10K	5%	1/10W	
R122	1-216-065-00	METAL GLAZE	4.7K	5%	1/10W	
R123	1-216-057-00	METAL GLAZE	2.2K	5%	1/10W	
R124	1-216-047-00	METAL GLAZE	820	5%	1/10W	
R125	1-216-023-00	METAL GLAZE	82	5%	1/10W	
R126	1-216-041-00	METAL GLAZE	470	5%	1/10W	
R127	1-216-059-00	METAL GLAZE	2.7K	5%	1/10W	
R128	1-216-053-00	METAL GLAZE	1.5K	5%	1/10W	
R129	1-216-085-00	METAL GLAZE	33K	5%	1/10W	
R130	1-216-081-00	METAL GLAZE	22K	5%	1/10W	
R131	1-216-041-00	METAL GLAZE	470	5%	1/10W	
R132	1-216-027-00	METAL GLAZE	120	5%	1/10W	
R133	1-216-061-00	METAL GLAZE	3.3K	5%	1/10W	
R134	1-216-073-00	METAL GLAZE	10K	5%	1/10W	
R145	1-216-037-00	METAL GLAZE	330	5%	1/10W	
R146	1-216-037-00	METAL GLAZE	330	5%	1/10W	
R147	1-216-077-00	METAL GLAZE	15K	5%	1/10W	
R148	1-216-065-00	METAL GLAZE	4.7K	5%	1/10W	
R149	1-216-079-00	METAL GLAZE	18K	5%	1/10W	
R150	1-216-085-00	METAL GLAZE	33K	5%	1/10W	
R151	1-216-047-00	METAL GLAZE	820	5%	1/10W	
R152	1-216-047-00	METAL GLAZE	820	5%	1/10W	
R153	1-216-043-00	METAL GLAZE	560	5%	1/10W	
R154	1-216-089-00	METAL GLAZE	47K	5%	1/10W	

VARIABLE RESISTOR

Ref.No	Part No.	Description	Remark
RV102	1-230-869-11	RES, ADJ, METAL GLAZE 4.7K	
RV103	1-230-870-11	RES, ADJ, METAL GLAZE 10K	
RV104	1-230-869-11	RES, ADJ, METAL GLAZE 4.7K	

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*A-7061-958-A MA-37P BOARD, COMPLETE (Ref.No 9,000 Series)
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CAPACITOR

Ref.No	Part No.	Description				Remark
C451	1-126-154-11	ELECT	47MF	20%	6.3V	
C452	1-162-638-11	CERAMIC CHIP	1MF		16V	
C453	1-163-038-00	CERAMIC CHIP	0.1MF		25V	
C455	1-163-137-00	CERAMIC CHIP	680PF	5%	50V	
C456	1-163-077-00	CERAMIC CHIP	0.1MF		50V	
C457	1-164-157-11	CERAMIC CHIP	0.068MF	10%	25V	
C459	1-163-009-11	CERAMIC CHIP	0.001MF	10%	50V	
C460	1-163-038-00	CERAMIC CHIP	0.1MF		25V	
C464	1-162-638-11	CERAMIC CHIP	1MF		16V	
C465	1-163-038-00	CERAMIC CHIP	0.1MF		25V	
C466	1-124-225-00	ELECT	100MF	20%	6.3V	
C470	1-163-038-00	CERAMIC CHIP	0.1MF		25V	
C471	1-163-117-00	CERAMIC CHIP	100PF	5%	50V	
C474	1-162-638-11	CERAMIC CHIP	1MF		16V	

CONNECTOR

Ref.No	Part No.	Description	Remark
CN451	1-565-877-11	PIN, CONNECTOR (PC BOARD) 5P	
CN452	*1-566-182-11	PIN, CONNECTOR (PC BOARD) 3P	

IC

Ref.No	Part No.	Description	Remark
IC451	8-759-820-51	IC LA7293	

JACK

Ref.No	Part No.	Description	Remark
J451	1-507-921-00	JACK (MIC)	
J452	1-563-454-11	JACK, MINIATURE (DC OUT)	

TRANSISTOR

Ref.No	Part No.	Description	Remark
Q451	8-729-100-66	TRANSISTOR 2SC1623	

When indicating parts by reference number, please include the board name.

Ref.No	Part No.	Description	Remark
		RESISTOR	
R451	1-216-063-00	METAL GLAZE 3.9K 5% 1/10W	
R452	1-216-748-11	METAL GLAZE 39K 5% 1/10W	
R453	1-216-089-00	METAL GLAZE 47K 5% 1/10W	
R455	1-216-073-00	METAL GLAZE 10K 5% 1/10W	
R456	1-216-069-00	METAL GLAZE 6.8K 5% 1/10W	
R459	1-216-001-00	METAL GLAZE 10 5% 1/10W	
R460	1-216-025-00	METAL GLAZE 100 5% 1/10W	
R462	1-216-073-00	METAL GLAZE 10K 5% 1/10W	
R465	1-216-079-00	METAL GLAZE 18K 5% 1/10W	
R467	1-216-059-00	METAL GLAZE 2.7K 5% 1/10W	
		SWITCH	
S451	1-570-910-21	SWITCH, TACTIL (REFLOW TYPE) (REC/START/STOP)	

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Ref.No	Part No.	Description	Remark
	*A-7061-955-A	PS-225P BOARD, COMPLETE (Ref.No 1,000 Series) ***********************	
		CAPACITOR	
C936	1-124-438-00	ELECT 1MF 20% 50V	
C937	1-124-438-00	ELECT 1MF 20% 50V	
C938	1-163-809-11	CERAMIC CHIP 0.047MF 10% 25V	
C939	1-124-438-00	ELECT 1MF 20% 50V	
C940	1-164-161-11	CERAMIC CHIP 0.0022MF 50V	
C941	1-127-489-81	ELECT(SOLID) 10MF 20% 10V	
C942	1-163-125-00	CERAMIC CHIP 220PF 10% 50V	
C943	1-163-009-11	CERAMIC CHIP 0.001MF 10% 50V	
C944	1-127-561-11	ELECT(SOLID) 33MF 20% 10V	
C945	1-162-637-11	CERAMIC CHIP 0.47MF 16V	
C955	1-127-489-81	ELECT(SOLID) 10MF 20% 10V	
C957	1-124-589-11	ELECT 47MF 20% 10V	
C958	1-124-589-11	ELECT 47MF 20% 10V	
C959	1-124-589-11	ELECT 47MF 20% 10V	
C961	1-164-161-11	CERAMIC CHIP 0.0022MF 10% 50V	
C962	1-163-033-00	CERAMIC CHIP 0.022MF 50V	
C963	1-163-125-00	CERAMIC CHIP 220PF 10% 50V	
C964	1-124-234-00	ELECT 22MF 20% 16V	
C965	1-124-261-00	ELECT 10MF 20% 50V	
C966	1-124-261-00	ELECT 10MF 20% 50V	
C967	1-127-509-00	ELECT(SOLID) 3.3MF 20% 25V	
C968	1-124-598-11	ELECT 22MF 20% 25V	
C978	1-163-125-00	CERAMIC CHIP 220PF 5% 50V	
C984	1-124-570-11	ELECT 220MF 20% 16V	
C985	1-163-019-00	CERAMIC CHIP 0.0068MF 10% 50V	
C988	1-164-161-11	CERAMIC CHIP 0.0022MF 50V	
C989	1-164-161-11	CERAMIC CHIP 0.0022MF 50V	
C990	1-164-161-11	CERAMIC CHIP 0.0022MF 50V	
C991	1-163-809-11	CERAMIC CHIP 0.047MF 10% 25V	

Ref.No	Part No.	Description	Remark
		CONNECTOR	
CN901	1-506-481-11	PIN, CONNECTOR 2P	
		DIODE	
D935 ⚠	8-719-106-71	DIODE RD12M-B2	
D936	8-719-800-76	DIODE 1SS226	
D937	8-719-800-76	DIODE 1SS226	
D938	8-719-510-11	DIODE D1FS4	
D939	8-719-801-48	DIODE 1SS193	
D940	8-719-801-48	DIODE 1SS193	
D941	8-719-802-36	DIODE 1SS250	
D942	8-719-801-48	DIODE 1SS193	
D943	8-719-801-48	DIODE 1SS193	
		IC LINK	
PS901⚠	1-532-841-21	LINK, IC PRF1600 (1.6A)	
PS902⚠	1-532-841-21	LINK, IC PRF1600 (1.6A)	
PS903⚠	1-532-841-21	LINK, IC PRF1600 (1.6A)	
		IC	
IC935	8-759-937-36	IC TL1451ACNS	
		JACK	
J901	1-537-241-11	TERMINAL BOARD (BATTERY)	
		COIL	
L935	1-410-690-11	COIL, CHOKE 22UH	
L937	1-421-918-11	COIL, CHOKE 10UH	
L938	1-410-626-11	COIL, CHOKE 47UH	
L939	1-410-626-11	COIL, CHOKE 47UH	
L940	1-408-978-21	INDUCTOR 47UH	
L942	1-410-626-11	COIL, CHOKE 47UH	
L944	1-410-385-11	INDUCTOR CHIP 22UH	
L946	1-421-918-11	COIL, CHOKE 10UH	
L951	1-410-658-31	INDUCTOR CHIP 220UH	
L952	1-412-026-11	INDUCTOR CHIP 1UH	
L953	1-412-026-11	INDUCTOR CHIP 1UH	
L954	1-412-026-11	INDUCTOR CHIP 1UH	
L955	1-412-026-11	INDUCTOR CHIP 1UH	
L956	1-412-026-11	INDUCTOR CHIP 1UH	
L957	1-412-026-11	INDUCTOR CHIP 1UH	
		TRANSISTOR	
Q935	8-729-805-43	TRANSISTOR 2SC3396	
Q936	8-729-805-67	TRANSISTOR 2SA1342	
Q937	8-729-805-67	TRANSISTOR 2SA1342	
Q938	8-729-805-43	TRANSISTOR 2SC3396	
Q939	8-729-805-67	TRANSISTOR 2SA1342	
Q940	8-729-100-67	TRANSISTOR 2SC1623-L7	
Q941 ⚠	8-729-105-29	TRANSISTOR 2SA1385	
Q942	8-729-805-25	TRANSISTOR 2SB1121	

The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety.
Replace only with part number specified.

When indicating parts by reference number, please include the board name.

Ref.No	Part No.	Description	Remark
Q943	8-729-805-67	TRANSISTOR 2SA1342	
Q944	8-729-805-43	TRANSISTOR 2SC3396	
Q945	8-729-216-22	TRANSISTOR 2SA1162	
Q946	8-729-216-22	TRANSISTOR 2SA1162	
Q947	⚠8-729-140-55	TRANSISTOR 2SK739	
Q952	8-729-901-04	TRANSISTOR DTA114EK	
Q953	8-729-901-01	TRANSISTOR DTC144EK	

RESISTOR

Ref.No	Part No.	Description	Remark
R935	1-216-065-00	METAL GLAZE 4.7K 5% 1/10W	
R936	1-216-071-00	METAL GLAZE 8.2K 5% 1/10W	
R937	1-216-073-00	METAL GLAZE 10K 5% 1/10W	
R938	1-216-065-00	METAL GLAZE 4.7K 5% 1/10W	
R939	1-216-099-00	METAL GLAZE 120K 5% 1/10W	
R940	1-216-049-00	METAL GLAZE 1K 5% 1/10W	
R941	1-216-065-00	METAL GLAZE 4.7K 5% 1/10W	
R942	1-216-748-11	METAL GLAZE 39K 5% 1/10W	
R943	1-216-033-00	METAL GLAZE 220 5% 1/10W	
R944	1-216-051-00	METAL GLAZE 1.2K 5% 1/10W	
R945	1-216-027-00	METAL GLAZE 120 5% 1/10W	
R946	1-216-073-00	METAL GLAZE 10K 5% 1/10W	
R947	1-216-059-00	METAL GLAZE 2.7K 5% 1/10W	
R948	1-216-081-00	METAL GLAZE 22K 5% 1/10W	
R949	1-216-049-00	METAL GLAZE 1K 5% 1/10W	
R950	1-216-037-00	METAL GLAZE 330 5% 1/10W	
R951	1-216-065-00	METAL GLAZE 4.7K 5% 1/10W	
R953	1-216-099-00	METAL GLAZE 120K 5% 1/10W	
R954	1-216-065-00	METAL GLAZE 4.7K 5% 1/10W	
R955	1-216-065-00	METAL GLAZE 4.7K 5% 1/10W	
R956	1-216-073-00	METAL GLAZE 10K 5% 1/10W	
R957	1-216-049-00	METAL GLAZE 1K 5% 1/10W	
R958	1-216-035-00	METAL GLAZE 270 5% 1/10W	
R959	1-216-049-00	METAL GLAZE 1K 5% 1/10W	
R960	1-216-001-00	METAL GLAZE 10 5% 1/10W	
R961	1-216-085-00	METAL GLAZE 33K 5% 1/10W	
R962	1-216-059-00	METAL GLAZE 2.7K 5% 1/10W	
R975	1-216-063-00	METAL GLAZE 3.9K 5% 1/10W	
R978	1-216-089-00	METAL GLAZE 47K 5% 1/10W	
R985	1-216-073-00	METAL GLAZE 10K 5% 1/10W	
R986	1-216-081-00	METAL GLAZE 22K 5% 1/10W	
R987	1-216-073-00	METAL GLAZE 10K 5% 1/10W	
R990	1-216-121-00	METAL GLAZE 1M 5% 1/10W	

VARIABLE RESISTOR

Ref.No	Part No.	Description	Remark
RV936	1-230-867-11	RES, ADJ, METAL GLAZE 1K	
RV937	1-230-866-11	RES, ADJ, METAL GLAZE 470	
RV938	1-230-869-11	RES, ADJ, METAL GLAZE 4.7K	

TRANSFORMER

Ref.No	Part No.	Description	Remark
T936	1-449-454-11	TRANSFORMER, CONVERTER	

CONNECTOR

Ref.No	Part No.	Description	Remark
W901	1-564-610-11	CONNECTOR, BOARD TO BOARD	
W902	1-564-610-11	CONNECTOR, BOARD TO BOARD	

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*1-631-827-21 KS-6P BOARD (Ref.No 8,000 Series)
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CONNECOTR

Ref.No	Part No.	Description	Remark
CN501	*1-562-880-21	CONNECOTR, CARD EDGE 15P	

CONNECTOR

Ref.No	Part No.	Description	Remark
W502	1-574-456-11	CABLE, FLAT (1.0MM PITCH) 15P	

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*1-631-831-21 RC-29P BOARD (Ref.No 10,000 Series)
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CONNECTOR

Ref.No	Part No.	Description	Remark
CN401	1-566-760-11	PIN, CONNECTOR (PC BOARD) 5P	
CN951	*1-568-521-11	PIN, CONNECTOR (PC BOARD) 13P	
CN952	*1-566-182-11	PIN, CONNECTOR (PC BOARD) 3P	

JACK

Ref.No	Part No.	Description	Remark
J951	1-565-276-11	JACK, ULTRA SMALL 1P (REMOTE)	
J952	1-507-921-00	JACK (②)	

COIL

Ref.No	Part No.	Description	Remark
L991	1-410-369-11	INDUCTOR CHIP 1UH	
L992	1-410-369-11	INDUCTOR CHIP 1UH	
L993	1-410-369-11	INDUCTOR CHIP 1UH	
L994	1-410-369-11	INDUCTOR CHIP 1UH	

RESISTOR

Ref.No	Part No.	Description	Remark
R995	1-216-296-00	METAL GLAZE 0 5% 1/8W	

SWITCH

Ref.No	Part No.	Description	Remark
S951	1-553-977-00	SWITCH, SLIDE (STANDBY/LOCK)	
S952	1-571-838-11	SWITCH, TACTIL (START/STOP)	

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*A-7062-012-A VF-22P BOARD, COMPLETE (Ref.No 4,000 Series)
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*3-674-372-00 HOLDER (A), LED

CAPACITOR

Ref.No	Part No.	Description	Remark
C901	1-126-369-11	ELECT 220MF 20% 6.3V	
C902	1-163-038-00	CERAMIC CHIP 0.1MF 25V	
C904	1-127-486-11	ELECT(SOLID) 47MF 20% 6.3V	
C905	⚠1-163-009-11	CERAMIC CHIP 0.001MF 10% 50V	

The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety.
Replace only with part number specified.

When indicating parts by reference number, please include the board name.

Ref.No	Part No.	Description			Remark
C906	1-163-115-00	CERAMIC CHIP	82PF	5%	50V
C907	⚠.1-162-625-11	CERAMIC CHIP	0.0047MF	5%	50V
C908	⚠.1-164-182-11	CERAMIC CHIP	0.0033MF	10%	50V
C909	1-126-193-11	ELECT CHIP	1MF	20%	50V
C911	1-131-394-21	TANTALUM	68MF	10%	3.15V
C912	1-102-038-00	CERAMIC	0.001MF		500V
C913	1-163-033-00	CERAMIC CHIP	0.022MF		50V
C915	1-126-193-11	ELECT CHIP	1MF	20%	50V
C916	1-163-037-11	CERAMIC CHIP	0.022MF	10%	25V
C917	1-135-166-21	TANTAL. CHIP	47MF	20%	6.3V
C918	1-162-638-11	CERAMIC CHIP	1MF		16V
C919	1-135-070-00	TANTAL. CHIP	0.1MF	10%	35V
C920	1-164-232-11	CERAMIC CHIP	0.01MF	10%	50V

CONNECTOR

CN901	*1-566-195-21	PIN, CONNECTOR (PC BOARD) 2P
CN902	*1-566-195-11	PIN, CONNECTOR (PC BOARD) 2P
CN904	*1-566-759-11	PIN, CONNECTOR (PC BOARD) 4P

CONPOSITION CIRCUIT BLOCK

CP901	1-238-119-11	RES, ADJ

CRT SOCKET

CRT901	1-526-978-21	SOCKET ASSY, CRT

DIODE

D903	8-719-400-20	DIODE MA152WA

IC

IC901	8-759-420-01	IC AN2512S

COIL

L901	1-408-421-00	INDUCTOR	100UH
L902	1-410-385-11	INDUCTOR CHIP	22UH
L903	⚠.1-459-858-11	COIL, FERRITE (HLC)	

TRANSISTOR

Q903	⚠.8-729-106-68	TRANSISTOR 2SD1615A-GP
Q904	8-729-216-31	TRANSISTOR 2SA1163G

RESISTOR

R902	1-216-051-00	METAL GLAZE	1.2K	5%	1/10W
R903	1-216-041-00	METAL GLAZE	470	5%	1/10W
R907	1-216-063-00	METAL GLAZE	3.9K	5%	1/10W
R908	1-216-063-00	METAL GLAZE	3.9K	5%	1/10W
R909	1-216-061-00	METAL GLAZE	3.3K	5%	1/10W
R911	1-216-079-00	METAL GLAZE	18K	5%	1/10W
R912	1-216-295-00	METAL GLAZE	0	5%	1/10W
R913	1-216-295-00	METAL GLAZE	0	5%	1/10W
R914	1-216-133-00	METAL GLAZE	3.3M	5%	1/10W
R915	1-216-133-00	METAL GLAZE	3.3M	5%	1/10W
R916	1-216-125-00	METAL GLAZE	1.5M	5%	1/10W
R917	1-216-121-00	METAL GLAZE	1M	5%	1/10W
R919	1-216-097-00	METAL GLAZE	100K	5%	1/10W
R920	1-216-113-00	METAL GLAZE	470K	5%	1/10W
R921	1-216-013-00	METAL GLAZE	33	5%	1/10W
R922	1-216-055-00	METAL GLAZE	1.8K	5%	1/10W
R923	1-216-025-00	METAL GLAZE	100	5%	1/10W
R924	1-216-306-11	METAL GLAZE	3.9	5%	1/10W
R925	1-216-336-11	METAL GLAZE	47K	1%	1/10W
R926	1-216-107-00	METAL GLAZE	270K	1%	1/10W
R928	1-216-870-11	METAL GLAZE	180K	1%	1/10W
R929	1-216-053-00	METAL GLAZE	1.5K	5%	1/10W
R930	1-216-089-00	METAL GLAZE	47K	5%	1/10W
R931	1-216-121-00	METAL GLAZE	1M	5%	1/10W
R950	1-216-311-00	METAL GLAZE	6.8	5%	1/10W

VARIABLE RESISTOR

RV901	1-238-647-11	RES, ADJ, METAL GLAZE 4.7M

TRANSFORMER

T901	⚠.1-439-428-11	TRANSFORMER ASSY, FLYBACK

THERMISTOR

TH901	1-807-938-11	THERMISTOR

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*1-630-067-21 LD-17P BOARD (Ref.No 5,000 Series)
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DIODE

D901	8-719-941-34	DIODE GL1HD51
D902	8-719-812-41	DIODE TLR124

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MISCELLANEOUS
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	⚠.1-451-310-21	DEFLECTION YOKE (B/W) (VF-22P BOARD)
	1-542-125-21	MICROPHONE (C-2027)
	1-575-064-11	CABLE, FLAT (1.0MM PITCH) 18P (CK-19P BOARD W651)
	1-808-505-12	SENSOR (DEW)
IC601	A-7091-132-A	IC ICX027BK-2 ASSY (CCD IMAGER)
J201	1-537-142-11	TERMINAL BOARD (AUDIO/RFUDC/VIDEO OUT)
J202	1-568-409-11	JACK, PIN 2P (AUDIO/VIDEO IN) (Australian, E MODEL)
M901	A-7048-235-A	DRUM ASSY (DGU-42A-R)
M902	8-835-331-01	MOTOR, DC U-22A (CAPSTAN)
M903	A-7040-160-A	MOTOR ASSY, THREADING
M904	3-707-803-01	MOTOR ASSY, AF GEAR (FOCUS)
M905	3-707-802-01	MOTOR ASSY, PZ GEAR (ZOOM)
M906	3-707-810-01	METER, IRIS (IRIS)
S901	1-571-837-11	SWITCH, PUSH (ZOOM)

The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety. Replace only with part number specified.

When indicating parts by reference number, please include the board name.

Ref.No	Part No.	Description	Remark
S902	3-707-805-01	SWITCH ASSY, AF	
S903	1-571-099-11	SWITCH (CASSETTE DOWN)	
V901	⚠.1-452-482-11	CRT ASSY (M01JYZ60WB) (VF-14P BOARD)	
V901	⚠.1-546-085-11	CATHODE-RAY TUBE, B/W (M01KGG007WB) (VF-22P BOARD)	

****

ACCESSORIES AND PACKING MATERIALS
****

Part No.	Description	Remark
*3-340-514-01	BAG, PROTECTION	
*3-732-952-01	CUSHION (UPPER) (AEP(TYPE 1), E, Australian)	
*3-732-953-01	CUSHION (LOWER) (AEP(TYPE 1), E, Australian)	
*3-733-985-02	CUSHION (UPPER) (AEP(TYPE 2), UK MODEL)	
*3-733-986-02	CUSHION (LOWER) (AEP(TYPE 2), UK MODEL)	
3-750-731-41	MANUAL, INSTRUCTION (AEP, UK MODEL) (English)	
3-750-731-51	MANUAL, INSTRUCTION (AEP MODEL) (French, German, Spanish)	
3-750-731-61	MANUAL, INSTRUCTION (AEP MODEL) (Dutch, Swedish, Italian)	
3-751-270-71	MANUAL, INSTRUCTION(E, Australian MODEL) (English)	
3-751-270-81	MANUAL, INSTRUCTION (E MODEL) (French, German, Spanish)	
3-751-270-91	MANUAL, INSTRUCTION (E MODEL) (Arabic)	
*3-764-631-12	INSTRUCTION, DEW CONDENSATION (AEP, E, Australian)	

**** ACCESSORIES AND PACKING MATERIALS (KIT) ****

A-6767-706-A	RFU ADAPTOR (RFU-89EA) (AEP, E MODEL)
A-6767-707-A	RFU ADAPTOR (RFU-89EA) (UK MODEL)
A-6767-772-A	RFU ADAPTOR (RFU-89ASA) (Australian)
1-571-164-11	SWITCH, ANTENNA CHANGE (CABLE)
3-712-673-01	SCREWDRIVER (AEP, UK, E MODEL)
*3-733-938-01	CUSHION,ACC (AEP (TYPE 1), E, Australian)
3-733-958-01	BELT, CARRYING (AEP, UK MODEL)
*3-733-771-21	INDIVIDUAL CARTON (AEP(TYPE 1), E, Australian)
*3-733-975-21	INDIVIDUAL CARTON(AEP(TYPE 2), UK MODEL)
*3-733-987-02	CUSHION, ACC (AEP(TYPE 2), UK MODEL)
3-741-534-11	BELT, SHOULDER (E, Australian MODEL)
** AC-V30	AC POWER ADAPTOR
*** NP-66H	RECHARGEBLE BATTERY

Note

** MARK PARTS IS AVAILABLE FOR REPAIR SERVICE.
*** MARK PARTS IS AVAILABLE AS AN OPTIONAL ACCESSORY.

****

Ref.No	Part No.	Description	Remark

HARDWARE LIST
****

SCREW

7-621-281-15	SCREW +P 2X2
7-627-553-37	PRECISION SCREW +P 2X3 TYPE 3
7-627-553-48	PRECISION SCREW +P 2X4 TYPE 3

STEEL BALL

7-671-155-01	STEEL BALL 3.0
7-671-156-01	BALL, STAINLESS

****

The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety. Replace only with part number specified.

When indicating parts by reference number, please include the board name.

SECTION 7
CAMERA ADJUSTMENTS

During the adjustment, see the adjustment element location to the adjustment from page 246.

7-1. PRE-ADJUSTMENT PREPARATIONS (CAMERA BLOCK)

7-1-1. List of Servicing Jigs

- Oscilloscope
- Regulated power supply (2 units)
- Adjusting screwdriver
- Color monitor
- Vectorscope
- Digital voltmeter

Ref. No.	Part Name	Part No.	Use
J-1	Filter (C14) for color temperature correction	J-6080-054-A	Auto white balance adjustment
J-2	ND filter 1.0	J-6080-808-A	Max. gain adjustment (two used)
	ND filter 0.4	J-6080-806-A	Iris adjustment, iris in/out adjustment (two used)
	ND filter 0.3	J-6080-818-A	Max. gain adjustment (two used)
	ND filter 0.1	J-6080-807-A	Iris adjustment, iris in/out adjustment
J-3	Pattern box PTB-500 *	J-6029-140-A	
J-4	Pattern box color chart	J-6020-250-A	
J-5	Siemens star	J-6080-875-A	For flange back adjustment, auto-focus adjustment
J-6	AF microcomputer data reading jig	J-6082-025-A	
J-7	Adjustment remote controller	J-6082-053-A	
J-8	Extension cable	J-6082-019-A	Extension between W602 on CD-17P board and CN601 on CV-9 board.

* PTB-100 is not available.

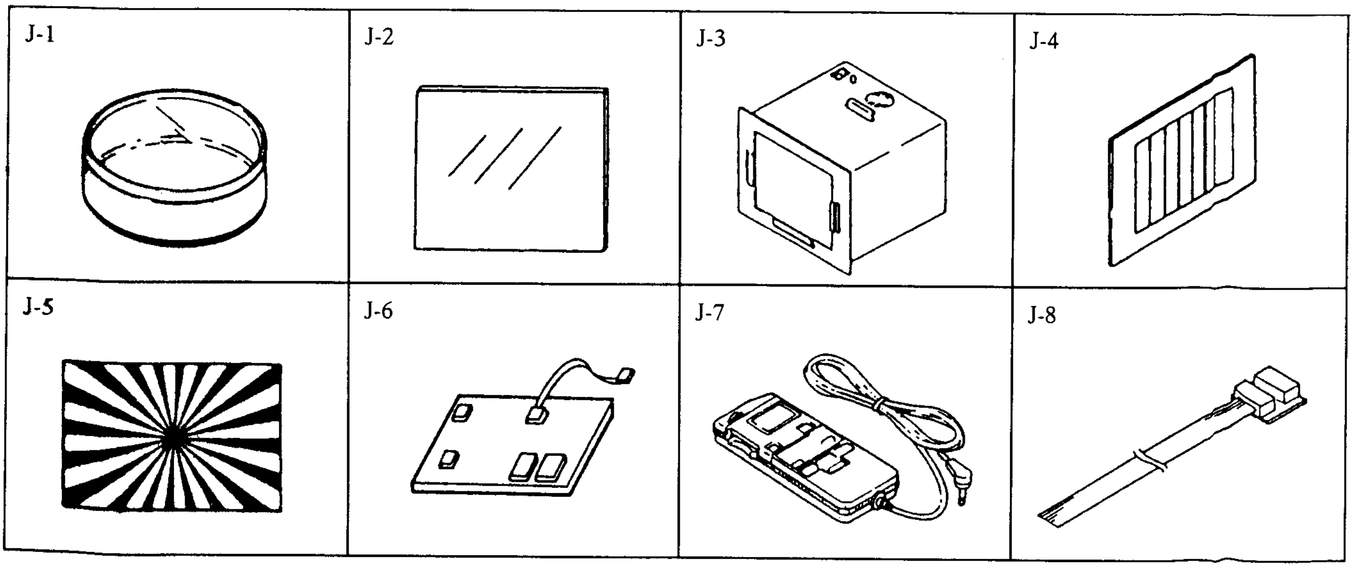


Fig. 7-1.

7-1-2. Preparations

Note: Refer to "SECTION 2 DISASSEMBLY" for details on removal of the cabinet and various boards.

1) Connect the various devices for adjustment as shown in Fig. 7-3.
2) The EVF (electronic viewfinder) is needed for confirmation of the white balance mode and shutter speed. This can confirmed on the monitor screen by turning on the data screen (ON/OFF by S509 on VK-3P board). Remove CN901 on the CV-9 board when the EVF is not needed.
3) The mic amplifier (MA-37P board) is not needed. Remove CN401 on the CO-2P board.

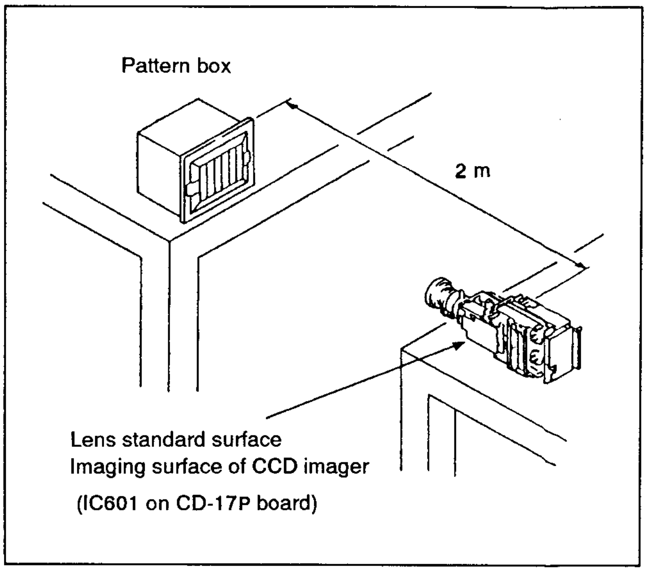
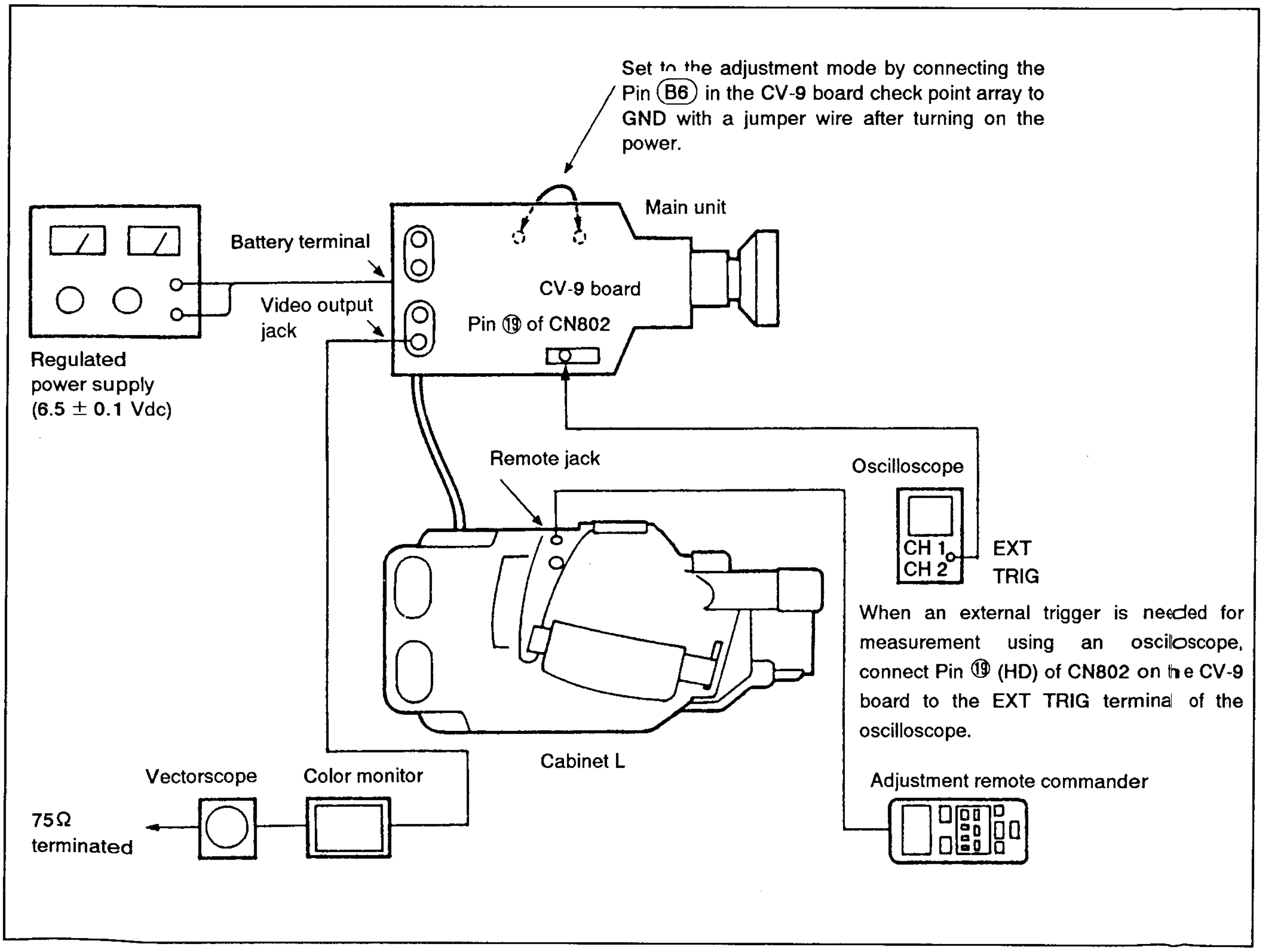

Pattern box
2 m
Lens standard surface
Imaging surface of CCD imager
(IC601 on CD-17P board)

Fig. 7-2.


Main unit
Battery terminal
Video output jack
CV-9 board
Pin ⑲ of CN802
Regulated power supply (6.5 ± 0.1 Vdc)
Remote jack
Oscilloscope
CH 1
CH 2
EXT TRIG
Cabinet L
Vectorscope
Color monitor
75Ω terminated
Adjustment remote commander

Set to the adjustment mode by connecting the Pin (B6) in the CV-9 board check point array to GND with a jumper wire after turning on the power.

When an external trigger is needed for measurement using an oscilloscope, connect Pin ⑲ (HD) of CN802 on the CV-9 board to the EXT TRIG terminal of the oscilloscope.

Fig. 7-3.

7-1-3. Precautions

1) Setting of Switches
Unless indicated otherwise, the switches are set to the following positions and adjustment is made without a cassette inserted.
   1. Camera/video power switch (S501 on VK-3P board) ......camera
   2. Standby switch (S951 on RC-29P board) ......ON
   3. Auto-lock switch (Auto lock cover) ......OFF (When cabinet (right) is removed, the nuit goes into OFF states automatically)
   4. White balance button (S654 on CK-19P board) ......☼ (indoors white balance mode)
   5. Shutter button (S652 on CK-19P board) ......normal (1/50)

2) Adjustment Order
As a rule, the adjustments are performed in the listed order.

3) Subjects
   1. Color bar chart (standard picture frame)
   When performing adjustment using the color bar chart, adjusting the picture frame shown in Fig. 7-4. (standard picture frame).
   2. White pattern (standard picture frame)
   Remove the color bar chart from the pattern box and use the zoom lever so that the white pattern has the same size and is the same position as the color bar chart (standard picture frame).

Color bar chart standard picture frame

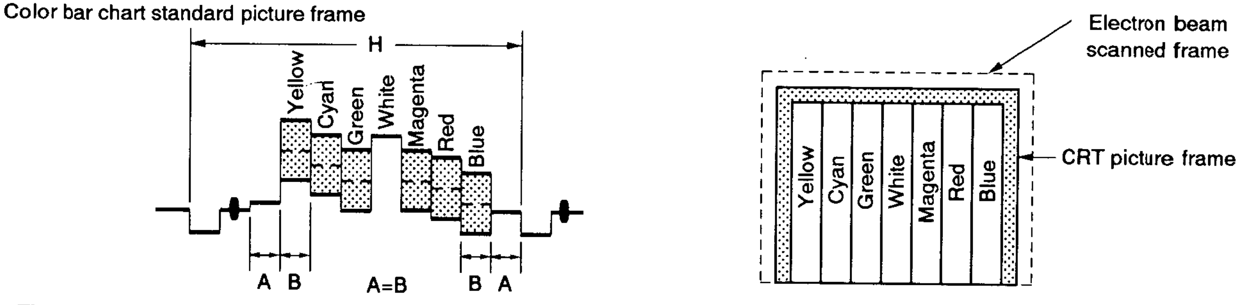

H
Yellow
Cyan
Green
White
Magenta
Red
Blue
A B
A=B
B A
Electron beam scanned frame
CRT picture frame
Yellow
Cyan
Green
White
Magenta
Red
Blue

Fig. a (Video output terminal output waveform)

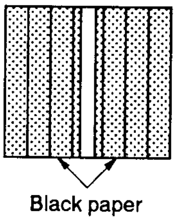
Fig. b (Picture on monitor TV)

Adjust the zooming and direction of the camera to obtain the output waveform shown in Fig. a and the monitor TV picture shown in Fig. b.

Fig. 7-4.

   3. All white pattern
   Remove the color bar chart from the pattern box and set the zoom lever fully to the TELE (68 mm) side.
   4. High luminance pattern
   Create the high luminance pattern as shown in Fig. 7-5., and adjust for the picture frame shown in Fig. 7-6.
   5. Siemens star (J-6080-875-A)
   Adjust the direction of the camera so that center of the Siemens star is lined up with the center of the monitor screen on the monitor TV screen.

High luminance pattern


Black paper

Attach black paper over all sections of the pattern except for half the width of the white bar. Record this with the standard picture frame.

Fig. 7-5.

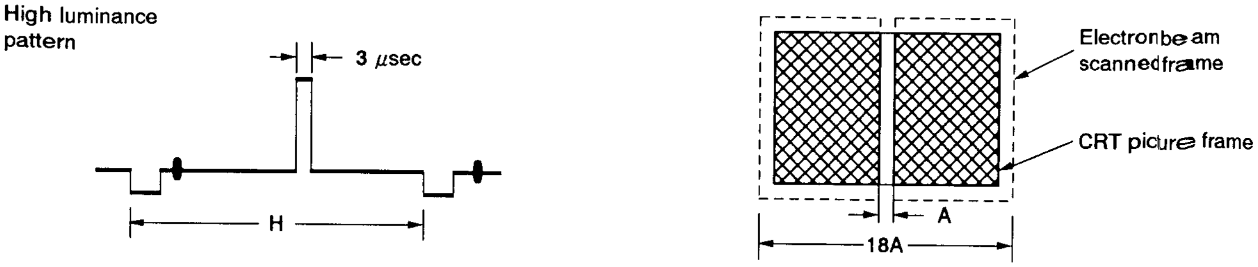

High luminance pattern
3 μsec
H
Electronbeam scannedframe
CRT picture frame
A
18A

Fig. a (Video output terminal output waveform)

Fig. b (Picture on monitor TV)

Adjust the zooming and direction of the camera to obtain the output waveform shown in Fig. a and the monitor TV picture shown in Fig. b.

Fig. 7-6.

7-1-4. Adjustment Remote Controller

An EVR (electronic variable resistor) is used as the adjustment element for the camera block, replacing the conventional semi-fixed resistor. The EVR is controlled by the EVR/AWB microcomputer (IC601 on CV-9 board). This microcomputer reads the data written in the nonvolatile memory of the microcomputer and sends it to the EVR. The EVR D-A converts this data (8 bits for each adjustment point) and creates the adjustment voltage.

Thus, it is necessary to change the adjustment data contained in the nonvolatile memory when adjusting the camera block, and the adjustment memory is used for this purpose.

The adjustment remote controller performs bidirectional communications with the camera block microcomputer using the remote control signal lines (LINCS). Adjustment addresses and adjustment data increment/decrement commands are sent to the camera block microcomputer from the adjustment remote controller. Adjustment addresses and adjustment data are sent from the camera block microcomputer to the adjustment remote controller.

1. Use of adjustment remote controller

Solder the lead wire to Pin (B6) (refer to 7-1-5) of the check point array on the CV-9 board.

1) Connect the adjustment remote controller to the remote terminal (J951 on RC-29P board). (Set the HOLD switch of the adjustment remote controller to the HOLD position (SERVICE position).)
2) Turn on the power of the main unit.
3) Connect Pin (B6) ($\overline{\text{CAM ADJ}}$) of the check point array to GND using a jumper wire.

   (This connection causes the EVR/AWB microcomputer to cease normal remote control operation and to begin adjustment dedicated communications.)

   Note: Be sure to make this connection only after turning on the power. The following will be displayed on the LCD of the adjustment remote controller if the connection is normal. (Adjustment data varies according to the unit.)

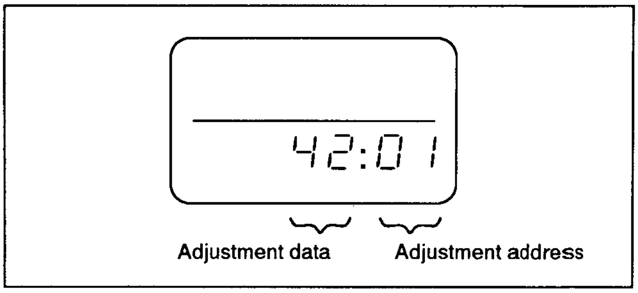


Fig. 7-7.

4) Designate the desired adjustment address using the adjustment remote controller. The adjustment address is incremented by pressing the FF (►►) button and decremented by pressing the REW (◄◄) button. (The adjustment address is indicated in decimal, and there are 89 addresses from 01 to 89. The adjustment address corresponds to the EVR (CV-9 board, IC608, IC609, IC804) output terminals. Refer to Table 7-3. for the adjustment contents of the various addresses.)

5) Perform adjustment by incrementing or decrementing the adjustment data.
The adjustment data is incremented by pressing the PLAY (►) button. The adjustment data is decremented by pressing the STOP (■) button.

- The adjustment data is indicated in hexadecimal. There are 256 values from 00 to FF.

Hexadecimal	0	1	2	3	4	5	6	7	8	9	A	B	C	D	E	F
Indication on LCD	0	1	2	3	4	5	6	7	8	9	A	b	c	d	E	F
Decimal equivalent	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15

Table 7-1.

- The adjustment data corresponds to the EVR (CV-9 board, IC608, IC609, IC804) output voltage, and is as follows.

Adjustment data ( ) is decimal equivalent	EVR output voltage
FF (=255)	Maximum value (approx. 5 Vdc)
↑ F0 (=240)	↑
E0 (=224)	
D0 (=208)	
C0 (=192)	
B0 (=176)	
A0 (=160)	
90 (=144)	
80 (=128)	Center value (approx. 2.5 Vdc)
70 (=112)	
60 (=96)	
50 (=80)	
40 (=64)	
30 (=48)	
20 (=32)	
↓ 10 (=16)	↓
00 (=0)	Minimum value (approx. 0 Vdc)

Table 7-2.

6) The adjustment address is changed using the FF (►►) button or REW (◄◄) button to store the adjustment data in the nonvolatile memory of EVR/AWB microcomputer (IC601 on CV-9 board).
(The new adjustment data is not stored in the nonvolatile memory unless this operation is performed.)

2. Precautions on use of adjustment remote controller

It is possible to accidentally erase correct adjustment data due to an error in operation of the adjustment remote controller. In order to prevent this, we recommend that you make a note of all adjustment data before adjustment and record the new adjustment data after completing each adjustment item.

3. Adjustment address table

Adjustment Address	Adjustment Voltage Output Terminal	Adjustment Item	Remarks	Adjustment Data Memo Column
01	Pin ⑱ of IC609	DELTA R	Auto white balance adjustment	
02	Pin ⑲ of IC609	DELTA B		
03	Pin ② of IC609	TITLE PEDESTAL		
04	Pin ③ of IC609	C-PED	Fixed at "99"	99
05	Pin ④ of IC609	R–Y GAIN	Color reproduction (gain) adjustment	
06	Pin ⑤ of IC609	B–Y GAIN		
07	Pin ⑥ of IC609	R–Y HUE	Color reproduction (hue) adjustment	
08	Pin ⑦ of IC609	B–Y HUE		
09	Pin ⑧ of IC609	C LEVEL		
10	Pin ⑨ of IC609	Y GAIN		
11	Pin ⑫ of IC609	R GAIN	Pre-white balance adjustment	
12	Pin ⑬ of IC609	B GAIN		
13	Pin ⑱ of IC608	C2 GAIN	Chroma matrix adjustment	
14	Pin ⑲ of IC608	C1 GAIN		
15	Pin ② of IC608	Y1 GAIN	Y matrix adjustment	
16	Pin ③ of IC608	HUE CONT	Burst phase adjustment	
17	Pin ④ of IC608	WC	White clip adjustment	
18	Pin ⑤ of IC608	Y LEVEL		
19	Pin ⑥ of IC608	SET UP		
20	Pin ⑦ of IC608	SYNC LEVEL		
21	Pin ⑧ of IC608	APERTURE	Aperture adjustment	
22	Pin ⑨ of IC608	BURST LEVEL		
23		———		–
24	Pin ⑬ of IC608	CHARACTOR		
25	Pin ⑱ of IC804	IRIS		
26	Pin ⑲ of IC804	FOCUS SPEED		
27	Pin ② of IC804	HALL OFFSET		
28	Pin ③ of IC804	MAX GAIN		
29	Pin ④ of IC804	TITLE A/D		
30		———		–
31	Pin ⑥ of IC804	V SUB		
32	Pin ⑦ of IC804	AGC		
33		———		–
34		———		–
35		———		–
36		———		–

Table 7-3. (1)

<table>
<tr><th>Adjustment Address</th><th>Adjustment Voltage Output Terminal</th><th>Adjustment Item</th><th>Remarks</th><th>Adjustment Data Memo Column</th></tr>
<tr><td>37</td><td></td><td>MODE</td><td>The following adjustment modes are selected by changing the adjustment data.
<table>
<tr><th>Adjustment data</th><th>Adjustment mode</th></tr>
<tr><td>00</td><td>Release</td></tr>
<tr><td>01</td><td>Focus hunching</td></tr>
<tr><td>03</td><td>Zoom position</td></tr>
<tr><td>05</td><td>Hall, iris close</td></tr>
<tr><td>07</td><td>Hall, iris open</td></tr>
<tr><td>09</td><td>Hall in/out threshold</td></tr>
<tr><td>0B</td><td>Auto-focus LLA</td></tr>
<tr><td>FD</td><td>Auto-focus filter fixed at FA</td></tr>
<tr><td>FF</td><td>Auto-focus filter fixed at FH</td></tr>
</table></td><td>00</td></tr>
<tr><td>38</td><td></td><td>LLA</td><td>Auto-focus LLA adjustment</td><td></td></tr>
<tr><td>39</td><td></td><td>MACRO</td><td></td><td></td></tr>
<tr><td>40</td><td></td><td>IN/OUT DOOR</td><td>Fixed at 00</td><td>00</td></tr>
<tr><td>41</td><td></td><td>LOW CONT</td><td>Auto-focus adjustment</td><td></td></tr>
<tr><td>42</td><td></td><td>BASE H</td><td>Auto-focus adjustment</td><td></td></tr>
<tr><td>43</td><td></td><td>STEP A</td><td>Fixed at 04</td><td>04</td></tr>
<tr><td>44</td><td></td><td>WIDE-THR</td><td>Fixed at 15</td><td>15</td></tr>
<tr><td>45</td><td></td><td>Hysteresis</td><td></td><td></td></tr>
<tr><td>46</td><td></td><td>HALL LEVEL</td><td></td><td></td></tr>
<tr><td>47</td><td></td><td>THR-SEARCH</td><td>Fixed at 06</td><td>06</td></tr>
<tr><td>48</td><td></td><td>FA BASE</td><td>Fixed at 28</td><td>28</td></tr>
<tr><td>49</td><td></td><td>KATAMUKI</td><td>Auto-focus adjustment</td><td></td></tr>
<tr><td>50</td><td></td><td>FH-NG-NG-THR</td><td>Fixed at 05</td><td>05</td></tr>
<tr><td>51</td><td></td><td>BACK RUSH</td><td>Fixed at 02</td><td>02</td></tr>
<tr><td>52</td><td></td><td>TOP CHECK SEARCH</td><td>Fixed at 02</td><td>02</td></tr>
<tr><td>53</td><td></td><td>TOP LIMIT</td><td>Fixed at 03</td><td>03</td></tr>
<tr><td>54</td><td></td><td>CHECK-PLUS</td><td>Fixed at 50</td><td>50</td></tr>
<tr><td>55</td><td></td><td>MANU-F-SPEED</td><td>Fixed at 04</td><td>04</td></tr>
<tr><td>56</td><td></td><td>M12-THR</td><td>Fixed at C8</td><td>C8</td></tr>
<tr><td>57</td><td></td><td>————</td><td>Not used</td><td>—</td></tr>
<tr><td>58</td><td></td><td>————</td><td>Not used</td><td>—</td></tr>
<tr><td>59</td><td></td><td>START R</td><td>Preset R CONT data for reset start</td><td>30</td></tr>
<tr><td>60</td><td></td><td>START B</td><td>Preset B CONT data for reset start</td><td>41</td></tr>
<tr><td>61</td><td></td><td>BTM SLP R</td><td>Fixed at 22</td><td>22</td></tr>
<tr><td>62</td><td></td><td>BTM SLP B</td><td>Fixed at 10</td><td>10</td></tr>
<tr><td>63</td><td></td><td>MDL SLP R</td><td>Fixed at 00</td><td>00</td></tr>
<tr><td>64</td><td></td><td>MDL SLP B</td><td>Fixed at 00</td><td>00</td></tr>
<tr><td>65</td><td></td><td>TOP SLP R</td><td rowspan="2">Auto white balance adjustment</td><td></td></tr>
<tr><td>66</td><td></td><td>TOP SLP B</td><td></td></tr>
<tr><td>67</td><td></td><td>KEIKO R</td><td>Fixed at 10</td><td>10</td></tr>
<tr><td>68</td><td></td><td>KEIKO B</td><td>Fixed at 00</td><td>00</td></tr>
<tr><td>69</td><td></td><td>BTM UP</td><td>Fixed at 89</td><td>89</td></tr>
<tr><td>70</td><td></td><td>BTM DWN</td><td>Fixed at 61</td><td>61</td></tr>
</table>

Table 7-3. (2)

<table>
<tr><th>Adjustment Address</th><th>Adjustment Voltage Output Terminal</th><th>Adjustment Item</th><th>Remarks</th><th>Adjustment Data Memo Column</th></tr>
<tr><td>71</td><td></td><td>MDL UP</td><td>Fixed at 7C</td><td>7C</td></tr>
<tr><td>72</td><td></td><td>MDL DWN</td><td>Fixed at 6A</td><td>6A</td></tr>
<tr><td>73</td><td></td><td>TOP UP</td><td rowspan="2">Auto white balance adjustment</td><td></td></tr>
<tr><td>74</td><td></td><td>TOP DWN</td><td></td></tr>
<tr><td>75</td><td></td><td>KEIKO DWN</td><td>Fixed at 8C</td><td>8C</td></tr>
<tr><td>76</td><td></td><td>R DWN LMT</td><td>Fixed at 1E</td><td>1E</td></tr>
<tr><td>77</td><td></td><td>B UP LMT</td><td rowspan="5">Auto white balance adjustment</td><td></td></tr>
<tr><td>78</td><td></td><td>R OUT LMT</td><td></td></tr>
<tr><td>79</td><td></td><td>B OUT LMT</td><td></td></tr>
<tr><td>80</td><td></td><td>R OUTDOOR</td><td></td></tr>
<tr><td>81</td><td></td><td>B OUTDOOR</td><td></td></tr>
<tr><td>82</td><td></td><td>BM DIVID</td><td>Fixed at 23</td><td>23</td></tr>
<tr><td>83</td><td></td><td>DELAY TM</td><td>Auto white balance tracking speed. Fixed at 10</td><td>10</td></tr>
<tr><td>84</td><td></td><td>FAST TM</td><td>Fixed at 20</td><td>20</td></tr>
<tr><td>85</td><td></td><td>CAM DDS 0</td><td>Fixed at 00</td><td>00</td></tr>
<tr><td>86</td><td></td><td></td><td>Fixed at 00</td><td>00</td></tr>
<tr><td>87</td><td></td><td></td><td>Fixed at 00</td><td>00</td></tr>
<tr><td>88</td><td></td><td>CAM ALN</td><td>Fixed at 00</td><td>00</td></tr>
<tr><td>89</td><td></td><td>AWB mode</td><td>The following auto white balance adjustment modes are selected by changing the adjustment data.
<table>
<tr><th>Adjustment data</th><th>Adjustment mode</th></tr>
<tr><td>00</td><td>Release</td></tr>
<tr><td>10</td><td>White balance value output (within tracking zone)</td></tr>
<tr><td>E0</td><td>Auto white balance adjustment possible</td></tr>
<tr><td>F0</td><td>Auto white balance tracking zone evaluation invalid</td></tr>
</table></td><td>00</td></tr>
</table>

Table 7-3. (3)

7-1-5. Check Point Array

Almost all of the measurement points for camera block adjustment are located in the check point array on the CV-9 board. Solder short lead wires onto the terminals needed for adjustment and connect an oscilloscope, etc.

The terminal numbers and signal names for the check point array are shown in Table 7-4.

Terminal No.	Signal Name	Terminal No.	Signal Name
A1	G OUT	B1	R–Y
A2	N.C	B2	B–Y
A3	N.C	B3	Y(LPF)OUT
A4	Y0	B4	V SUB
A5	Y1	B5	AW ADJ
A6	C0	B6	$\overline{\text{CAM ADJ}}$
A7	C1	B7	MODE
A8	N.C	B8	VIDEO OUT
A9	YH	B9	SHUTTER EN
A10	C-OUT	B10	GND
A11	N.C	B11	CCD OUT

Table 7-4.

* N.C...... no connection

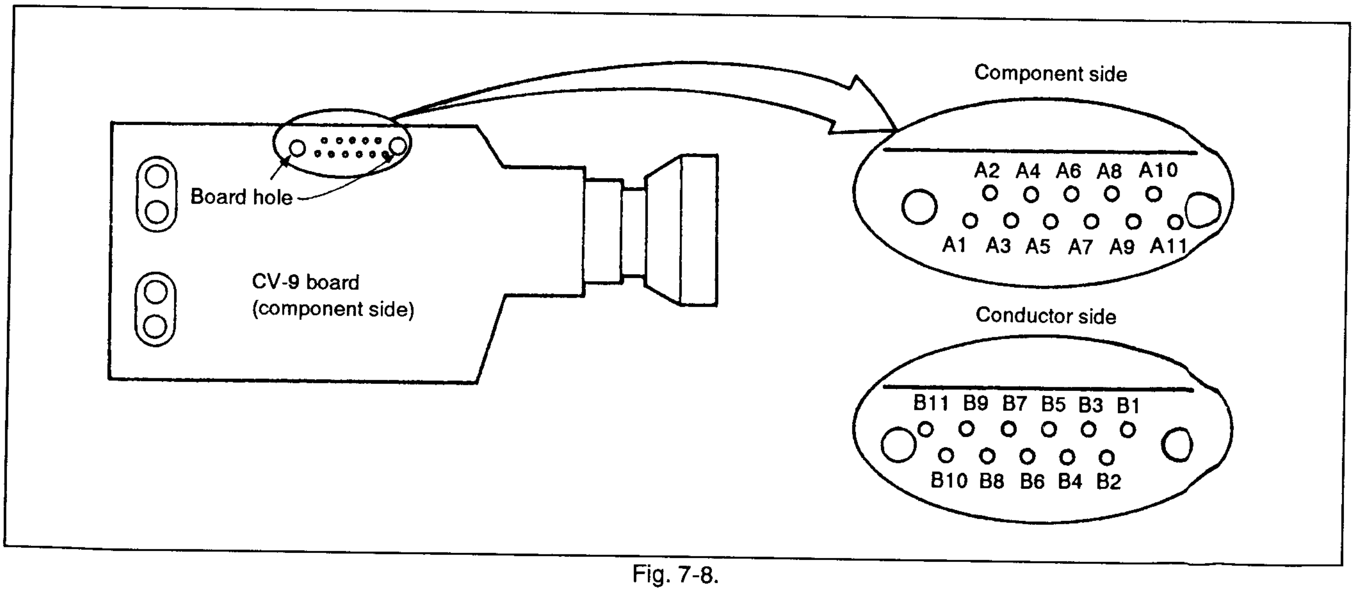

Board hole
CV-9 board
(component side)
Component side
A2 A4 A6 A8 A10
A1 A3 A5 A7 A9 A11
Conductor side
B11 B9 B7 B5 B3 B1
B10 B8 B6 B4 B2

Fig. 7-8.

7-1-6. AF Microcomputer Data Reading Jig

The AF microcomputer data reading jig converts the serial data (output data varies according to hall (iris) state, focus state, focus motor speed, zoom ring position, etc.) for adjustment output from the AF microcomputer (IC802 on CV-9 board) into a 2-digit hexadecimal code and displays it on the LED.

Connections:
Connect as shown in the diagram below.

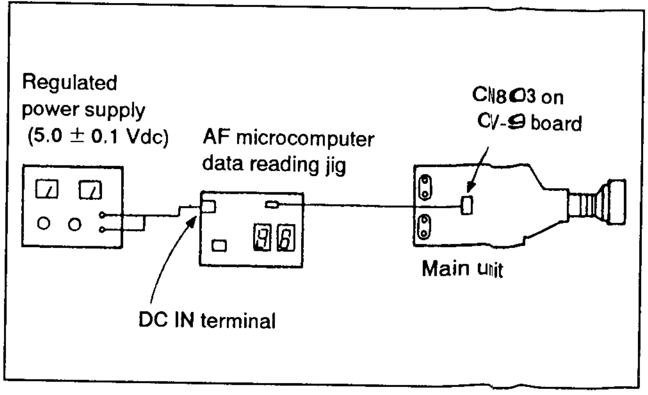

Regulated
power supply
(5.0 ± 0.1 Vdc)
AF microcomputer
data reading jig
CN803 on
CV-9 board
Main unit
DC IN terminal

Fig. 7-9.

7-1-7. Data Processing

For some of the adjustment items, calculation from the data (hexadecimal) indicated on the AF microcomputer data reading jig and adjustment remote controller is needed to obtain the adjustment data. In these cases, convert the hexadecimal values to decimal before calculation and reconvert the result to hexadecimal to obtain the adjustment data. A hexadecimal-decimal conversion table is shown in Table 7-5.

Hexadecimal-Decimal Conversion Table

Hexadecimal lower digit Hexadecimal upper digit	0	1	2	3	4	5	6	7	8	9	A (A)	B (b)	C (c)	② D (d)	E (E)	F (F)
0	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
1	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31
2	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47
3	48	49	50	51	52	53	54	55	56	57	58	59	60	61	62	63
4	64	65	66	67	68	69	70	71	72	73	74	75	76	77	78	79
5	80	81	82	83	84	85	86	87	88	89	90	91	92	93	94	95
6	96	97	98	99	100	101	102	103	104	105	106	107	108	109	110	111
7	112	113	114	115	116	117	118	119	120	121	122	123	124	125	126	127
8	128	129	130	131	132	133	134	135	136	137	138	139	140	141	142	143
9	144	145	146	147	148	149	150	151	152	153	154	155	156	157	158	159
A (A)	160	161	162	163	164	165	166	167	168	169	170	171	172	173	174	175
① B (b)	176	177	178	179	180	181	182	183	184	185	186	187	188	189	190	191
C (c)	192	193	194	195	196	197	198	199	200	201	202	203	204	205	206	207
D (d)	208	209	210	211	212	213	214	215	216	217	218	219	220	221	222	223
E (E)	224	225	226	227	228	229	230	231	232	233	234	235	236	237	238	239
F (F)	240	241	242	243	244	245	246	247	248	249	250	251	252	253	254	255

Note: ( ) is the indication on the jig or adjustment remote commander.

Example: The indication on the jig or adjustment remote commander is BD (b d).
As the upper digit is B (b) and the lower digit is D (d), a decimal value of 189 is obtained from the intersection of ① and ② in the above table.

Table 7-5.

7-2. CAMERA SYSTEM ADJUSTMENT

7-2-1. Flange Back Adjustment

Subject	Siemens star (2m directly in front of lens reference ("⌽" marked)
Measurement Point	Check with a monitor TV
Measuring Instrument	
Adjustment Element	Flange back adjusting pin
Tools	Phillips screwdriver, flat blade (–) screwdriver

Adjustment method:

1) Press the FOCUS switch (S655 on CK-19P board) to set to the MANUAL mode.
2) Position a Siemens star 2m directly in front of the lens reference plane (See Fig. 7-2.).
3) Orient the camera block to have the center of the Siemens star imaged on the monitor TV screen coincide with the monitor screen center.
4) Check to assure the smooth motion of the lens zoom lever to both its extreme WIDE position (8.5 mm) and TELE position (68 mm), and then set it at the extreme WIDE position. (In this process, also check the monitor image to assure proper zooming operation.)
5) Select adjustment address 37 with the adjustment remote controller and enter adjustment data of 07. (Iris open mode) At this time, adjust the illumination on the Siemens star or place an ND filter over the lens, and confirm that the proper image is displayed on the monitor TV screen.
6) Set the lens focusing mark at the center of "2".

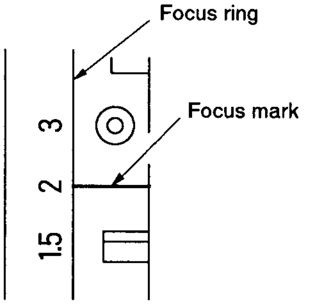


Fig. 7-10.

7) Open the DK-4P board and loosen flange back setscrew ❶ with a Phillips screwdriver. (See Fig. 7-12.)
8) By turning the flange back adjusting pin ❷ while watching the monitor screen, attain the optimum definition of a wedge at the Siemens star center on the screen. (Turn it a few turns to the left and right to ensure optimum definition.)
   Note: Do not turn the adjusting pin excessively in either direction.
9) While holding the flange back adjusting pin ❷ to prevent further rotation, retighten the flange back setscrew ❶.
10) With the zoom lever fixed at its WIDE end, turn the focusing ring and set it to the position that provides the optimum definition image of the wedge. Check to assure the focusing mark position is within the range shown in Fig. 7-11. Also, rotate the focusing ring to the close (1.2m) and far (∞) extremes and confirm that the wedge is no longer in focus.

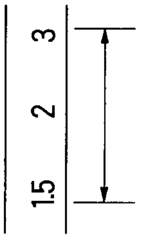


Fig. 7-11.

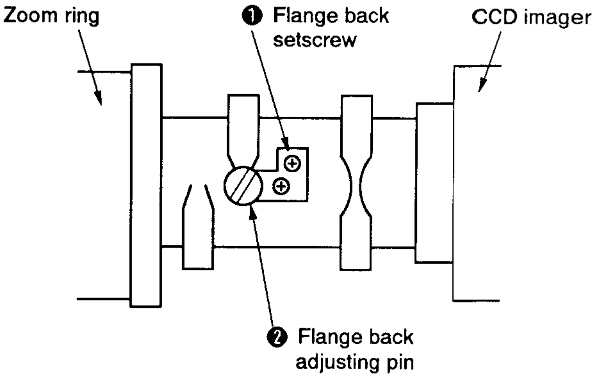


Fig. 7-12.

11) Fix the zoom lever at the extreme TELE position.
12) Turn the focusing ring and stop at the position where the wedge has optimum definition.
    Confirm that the focus mark is within ± 1.5 mm of "2".
13) Select adjustment address 37 with the adjustment remote controller and enter adjustment data of 00. (Iris normal)
14) Change the adjustment address to store the adjustment data in the memory.

7-2-2. 15V Power Supply Adjustment (PS-225P Board)

Measurement Point	Pin ② of W902
Measuring Instrument	Digital voltmeter
Adjustment Element	RV937
Specified Value	15.0 ± 0.5 Vdc

Adjustment method:
1) Adjust to 15.0 ± 0.5 Vdc with RV962.

7-2-3. Power Supply Check (PS-225P Board)

Measuring Instrument	Digital voltmeter
CAM 5V Check	
Measurment Point	Pin ④ of W902
Specified Value	5.05 ± 0.2 Vdc
32V Check	
Measurement Point	Pin ① of W902
Specified Value	32 ± 2 Vdc

Checking method:
1) Each power supply voltage should be at its specified level.

7-2-4. EVR Initial Settings

Set to the following initial settings of the adjustment data only when the EVR/AWB microcomputer (IC602 on CV-9 board) was replaced.

Adjustment Address	Adjustment Data Initial Value	Adjustment Address	Adjustment Data Initial Value	Adjustment Address	Adjustment Data Initial Value
01 (DELTA R)	50	44 (WIDE THR)	15	67 (KEIKO R)	10
02 (DELTA B)	50	47 (THR SEARCH)	06	68 (KEIKO B)	00
04 (C-PED)	99	48 (FA BASE)	28	69 (BTM UP)	89
16 (HUE CONT)	AE	49 (KATAMUKI)	06	70 (BTM DWN)	61
17 (WHITE CLIP)	FF	50 (FH-NG-NG-THR)	05	71 (MDL UP)	7C
18 (Y LEVEL)	40	51 (BACK RUSH)	02	72 (MDL DWN)	6A
25 (IRIS)	80	52 (TOP CHECK-SEARCH)	02	75 (KEIKO DWN)	8C
28 (MAX GAIN)	B0	53 (TOP LIMIT)	03	76 (R DWN LMT)	1E
31 (V SUB)	80	54 (CHECK-PLUS)	50	82 (AWB)	23
32 (AGC)	FF	55 (MANU-F-SPEED)	04	83 (D TM)	10
37 (MODE)	00	56 (M12-THR)	C8	84 (F TM)	20
38 (LLA)	3F	59 (START R)	30	85 (CAM DDS O)	00
39 (MACRO)	00	60 (START B)	41	86	00
40 (IN/OUT DOOR)	00	61 (BTM SLP R)	22	87	00
41 (LOW CONT)	03	62 (BTM SLP B)	10	88 (CAM ALN)	00
42 (BASE H)	03	63 (MDL SLP R)	00	89 (AWB MODE)	00
43 (STEPA)	04	64 (MDL SLP B)	00		

Table 7-6.

Adjustment method:
1) Set the adjustment data at the various adjustment addresses to the initial values using the adjustment remote controller.
2) Change the adjustment address to store the last adjustment data in the memory.

7-2-5. PLL Adjustment (CV-9 Board)

Measurement Point	Pin ⑳ of IC604
Measuring Instrument	Digital voltmeter
Adjustment Element	CT601
Specified Value	2.5 ± 0.2 Vdc

Adjustment method:

1) Adjust to 2.5 ± 0.2 Vdc with CT601.

7-2-6. V SUB Adjustment (CV-9 Board)

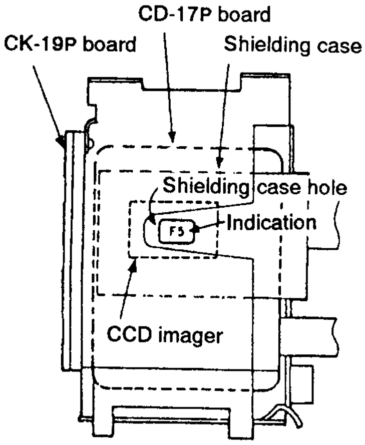
Subject	Not needed
Measurement Point	Pin (B4) (V SUB) of check point array
Measuring Instrument	Digital voltmeter
Adjustment Address	31 (V SUB)
Specified Value	(Voltage indicated by the imager) ± 0.05 Vdc

Adjustment method:

1) Set the adjustment address to 31 using the adjustment remote controller.
2) Change the adjustment data using the adjustment remote controller to set the VSUB voltage (Voltage indicated by the imager) to ± 0.05 Vdc.
3) Change the adjustment address to store the adjustment data in the memory.

Note: The VSUB specified voltage is expressed by two digits with the integer section abbreviation and decimal section by the imager.

Integer section abbreviation	Integer value
1	1
⋮	⋮
9	9
A	10
B	11
C	12
D	13
E	14
F	15
G	16
H	17
I	18
J	19
K	20
L	21



(Example)
If F5 is indicated, the integer value is F → 15 and decimal value is 5 → 0.5.
Thus, the VSUB voltage is 15 + 0.5 = 15.5 (Vdc).

Fig. 7-13.

7-2-7. Hall Adjustment (CV-9 Board)

Subject	All black (cover lens with black cap)
Measurement Point	CN803
Measuring Instrument	AF microcomputer data reading jig
Adjustment Element	RV801
Adjustment Address	27 (Hall Offset)
Specified Value	When iris closed: Minimum value of 01 to 04 When iris open: 3D or 3E

Adjustment method:

1) Set the adjustment address to 37 with the adjustment remote controller, and set the adjustment data to 05. (Setting when iris closed)
2) Change the adjustment address to 27.
3) Change the adjustment data until the indication on the AF microcomputer data reading jig is the minimum value in the range of 01 to 04. (Hall offset adjustment)
4) Change the adjustment address to 37 and set the adjustment data to 07. (Setting when iris open)
5) Adjust RV801 until the indication on the AF microcomputer data reading jig is either 3D or 3E. (3D is indicated as 3d .)
6) Repeat steps 1) through 5) until the specified values are satisfied.
7) Set the adjustment address to 37 and set the adjustment data to 00. (Releases adjustment mode)
8) Change the adjustment address to store the adjustment data in the memory.

7-2-8. Iris Adjustment (CV-9 Board)

Subject	Color bar chart standard picture frame
Filter	ND filter 0.4 and 0.1
Measurement Point	Pin(B11) (CCD OUT) of check point array
Measuring Instrument	Oscilloscope
Adjustment Address	25 (Iris)
Specified Value	360 ± 20 mVp-p

Adjustment method:

1) Set the adjustment address to 25 with the adjustment remote controller.
2) Without attaching an ND filter, change the adjustment data with the adjustment remote controller to set the IRIS OUT signal level to 360 ± 20 mVp-p.
3) Attach the ND filter 0.5 (0.4 ± 0.1) to the front of the lens and confirm that there is a smooth change in the signal level.
4) Remove the ND filter and confirm that the signal level is 360 ± 20 mVp-p.
5) Repeat 2) through 4) if the specified value is not met.
6) Change the adjustment address to store the adjustment data in the memory.

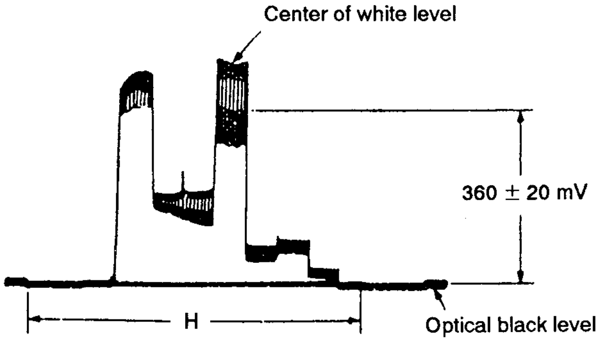


Fig. 7-14.

7-2-9. Iris In/Out Adjustment (CV-9 Board)

Subject	White pattern standard picture frame
Filter	ND filter 0.4 (two) and 0.1 (one)
Measurement Point	CN803
Measuring Instrument	AF microcomputer data reading jig
Adjustment Address	46 (hall level) 45 (hysteresis)

Adjustment method:

1) Cover the lens with the ND filter 0.8 (0.4+0.4).
2) Set the adjustment address to 37 with the adjustment remote controller and set the adjustment data to 09. (Hall in/out threshold mode setting)
3) Read the data indicated on the AF microcomputer data reading jig. This data will be a.
4) Change the adjustment address to 46 and enter a as the adjustment data.
5) Remove the ND filter 0.8 and replace it with ND filter 0.5 (0.4+0.1).
6) Read the data indicated on the AF microcomputer data reading jig. This data will be b.
7) Subtract data b from data a to obtain data c.
   (Refer to Table 7-5. Hexadecimal-Decimal Conversion Table)
   (Example)
   If a=1A and b=15, c=a–b =1A(26) – 15(21) =05
   ( ) indicates decimal value
8) Obtain the hysteresis data from data c using the table below.

Data c	Hysteresis Data
02, 03	01
04, 05, 06	02
07, 08, 09	03

   (Example)
   The hysteresis data is 02 if c=05.
9) Change the adjustment address to 45 and enter the hysteresis data as the adjustment data.
10) Change the adjustment address to 37 and set the adjustment data to 00.
   (Releases hall in/out threshold mode)
11) Change the adjustment address to store the adjustment data in the memory.

7-2-10. AGC Adjustment (CV-9 Board)

Subject	Color bar chart standard picture frame
Measurement Point	Pin (B3) (Y (LPF) OUT) of check point array
Measuring Instrument	Oscilloscope
Adjustment Address	32 (AGC)
Specified Value	160 ± 5 mVp-p

Adjustment method:

1) Set the adjustment address to 32 using the adjustment remote controller.
2) Change the adjustment data with the adjustment remote controller to set the Y (LPF) signal level to 160 ± 5 mVp-p.
3) Change the adjustment address to store the adjustment data in the memory.

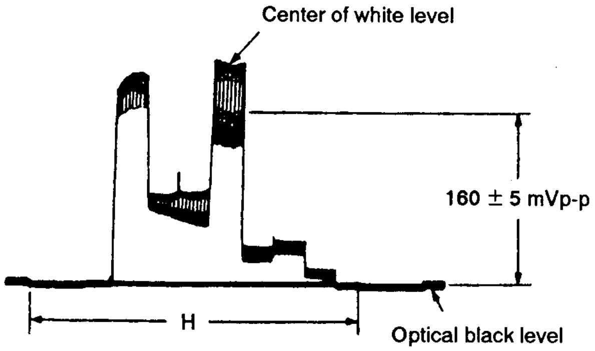


Fig. 7-15.

7-2-11. Y Signal Matrix Adjustment (CV-9 Board)

Subject	Color bar standard picture frame
Measurement Point	1: Pin (A4) (Y0) of check point array 2: Pin (A5) (Y1) of check point array
Measuring Instrument	Oscilloscope
Adjustment Address	15 (Y1 GAIN)
Specified Value	Y1 signal level=Y0 signal level

Adjustment method:

1) Connect the oscilloscope to Pin (A4) of the check point array and measure the Y0 signal level.
2) Connect the oscilloscope to Pin (A5) of the check point array.
3) Set the adjustment address to 15 using the adjustment remote controller.
4) Change the adjustment data until the Y1 signal level is the same as the Y0 signal level measured in 1).
5) Change the adjustment address to store the adjustment data in the memory.

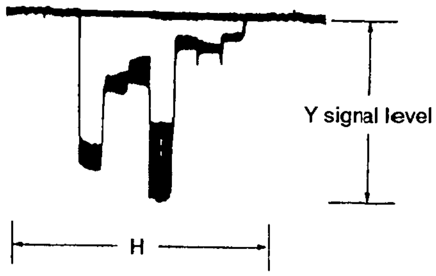


Fig. 7-16.

7-2-12. Chroma Signal Matrix Adjustment (1) (CV-9 Board)

Subject	Color bar standard picture frame
Measurement Point	1: Pin (A6) (C0) of check point array 2: Pin (A7) (C1) of check point array
Measuring Instrument	Oscilloscope
Adjustment Address	14 (C1 GAIN)
Specified Value	C1 signal level=C0 signal level

Adjustment method:

1) Connect the oscilloscope to Pin (A6) of the check point array and measure the C0 signal level. (The C0 signal level is the larger of the CR and CB signal levels.)
2) Connect the oscilloscope to Pin (A7) of the check point array.
3) Set the adjustment address to 14 using the adjustment remote controller.
4) Change the adjustment data until the C1 signal level is the same as the C0 signal level measured in 1).
5) Change the adjustment address to store the adjustment data in the memory.

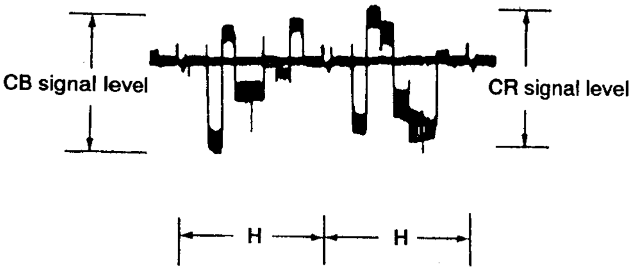


Fig. 7-17. C0 and C1 signal levels

7-2-13. Chroma Signal Matrix Adjustment (2) (CV-9 Board)

Subject	Color bar standard picture frame
Measurement Point	CH1 (X): Pin (B2) (B–Y) of check point array or collector of Q643 CH2 (Y): Pin (B1) (R–Y) of check point array or collector of Q613
Measuring Instrument	Oscilloscope (X-Y mode)
Adjustment Address	13 (C2 GAIN)
Specified Value	Separate color luminance points become one.

Note: Adjustment can be made in the same manner using a vectorscope.
(Vectorscope connection terminal: video output terminal)

Adjustment method:

1) Set the adjustment address to 13 using the adjustment remote controller.
2) Change the adjustment data so that the two separate color luminance points become one respectively.
3) Change the adjustment address to store the adjustment data in the memory.

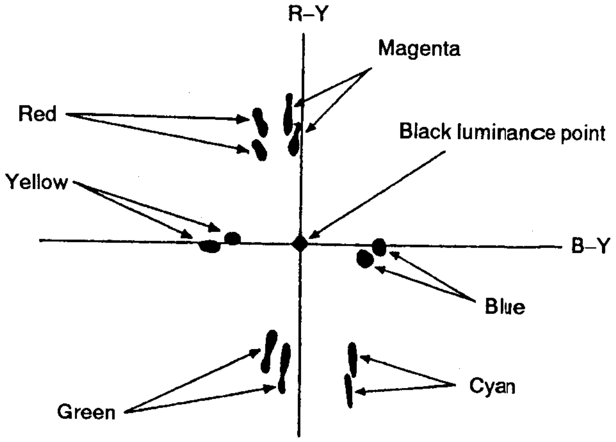


Fig. 7-18.

7-2-14. YH Level Adjustment (CV-9 Board)

Subject	Color bar chart standard picture frame
Measurement Point	Pin(A9) (YH) of check point array
Measuring Instrument	Oscilloscope
Adjustment Address	10 (Y GAIN)
Specified Value	900 ± 40 mVp-p

Adjustment method:

1) Set the adjustment address to 10 with the adjustment remote controller.
2) Change the adjustment data with the adjustment remote controller to set the YH signal level to 900 ± 40 mVp-p.
3) Change the adjustment address to store the adjustment data in the memory.

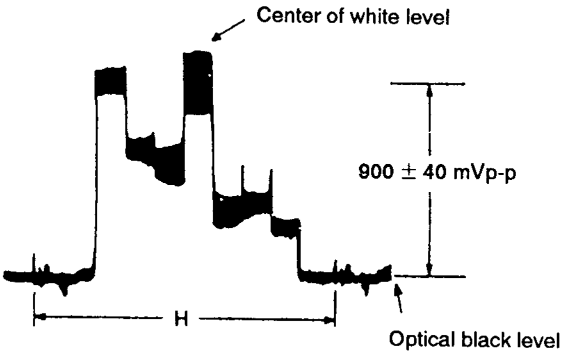


Fig. 7-19.

7-2-15. Sync Level Adjustment (CV-9 Board)

Subject	All black (cover lens with black cap)
Measurement Point	Pin (B8) (VIDEO OUT) of check point array
Measuring Instrument	Oscilloscope
Adjustment Address	20 (SYNC LEVEL)
Specified Value	150 ± 5 mVp-p

Adjustment method:

1) Set the adjustment address to 20 with the adjustment remote controller.
2) Change the adjustment data with the adjustment remote controller to set the sync level to 150 ± 5 mVp-p.
3) Change the adjustment address to store the adjustment data in the memory.

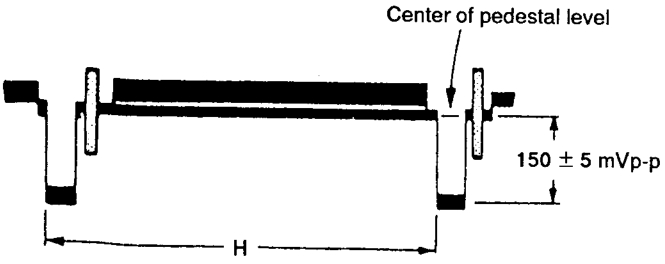


Fig. 7-20.

7-2-16. Setup Adjustment (CV-9 Board)

Subject	All black (cover lens with black cap)
Measurement Point	Pin (B8) (VIDEO OUT) of check point array
Measuring Instrument	Oscilloscope
Adjustment Address	19 (SET UP)
Specified Value	15 ± 5 mV

Note: 1) and 2) are steps taken to reduce noise.

Adjustment method:

1) Set the address to 21 (APERTURE) with the adjustment remote controller, and enter 00 as the adjustment data after making a note of the adjustment data for this at address.
2) Set the address to 28 (MAX GAIN) with the adjustment remote controller, and enter 00 as the adjustment data after making a note of the adjustment data for this address.
3) Set the adjustment address to 19 with the adjustment remote controller.
4) Change the adjustment data with the adjustment remote controller to set the setup level to 15 ± 5 mV.
5) Set the adjustment address to 21 and enter the adjustment data recorded in 1).
6) Set the adjustment address to 28 and enter the adjustment data recorded in 2).
7) Change the adjustment address to store the adjustment data in the memory.

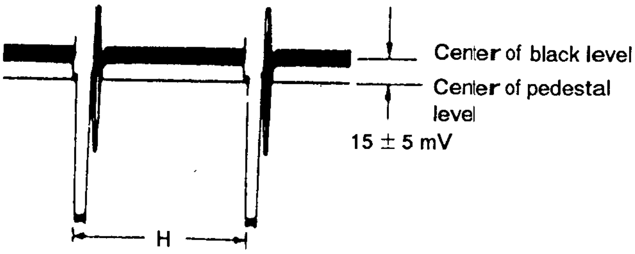


Fig. 7-21.

7-2-17. Y Level Adjustment (CV-9 Board)

Subject	Color bar chart standard picture frame
Measurement Point	Pin (B8) (VIDEO OUT) of check point array
Measuring Instrument	Oscilloscope
Adjustment Address	18 (Y LEVEL)
Specified Value	315 ± 10 mV

Adjustment method:

1) Set the adjustment address to 17 with the adjustment remote controller, and make a note of the adjustment data for this address.
2) Set the adjustment data to FF with the adjustment remote controller.
3) Set the adjustment address to 18 with the adjustment remote controller.
4) Change the adjustment data with the adjustment remote controller to set the Y signal level to 315 ± 10 mV.
5) Set the adjustment address to 17 and enter the adjustment data recorded in 1).
6) Change the adjustment address to store the adjustment data in the memory.

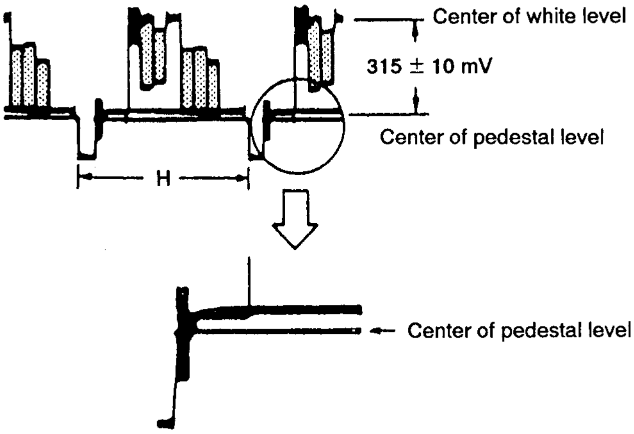


Fig. 7-22.

7-2-18. White Clip Adjustment (CV-9 Board)

Subject	High luminance pattern
Measurement Point	Pin (B8) (VIDEO OUT) of check point array
Measuring Instrument	Oscilloscope
Adjustment Address	17 (WHITE CLIP)
Specified Value	420 ± 10 mV

Adjustment method:

1) Set the adjustment address to 18 with the adjustment remote controller, and make a note of the adjustment data for this address.
2) Set the adjustment data to 40 with the adjustment remote controller.
3) Set the adjustment address to 17 with the adjustment remote controller.
4) Change the adjustment data with the adjustment remote controller to set the white clip level to 420 ± 10 mV.
5) Set the adjustment address to 18 and enter the adjustment data recorded in 1).
6) Change the adjustment address to store the adjustment data in the memory.

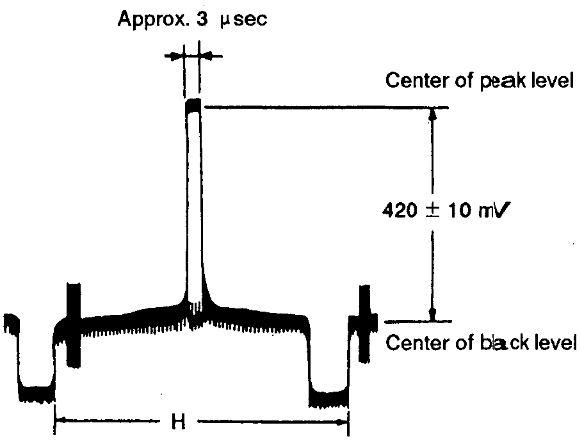


Fig. 7-23.

7-2-19. Aperture Adjustment (CV-9 Board)

Subject	Color bar chart standard picture frame
Measurement Point	Emitter of Q602
Measuring Instrument	Oscilloscope
Adjustment Address	21 (APERTURE)
Specified Value	70 ± 10 mV

Adjustment method:

1) Focus the camera and set the aperture level (lower peak between green and white) to maximum.
2) Change the adjustment data to set the lower peak between green and white to 70 ± 10 mV above the pedestal level.
3) Change the adjustment address to store the adjustment data in the memory.

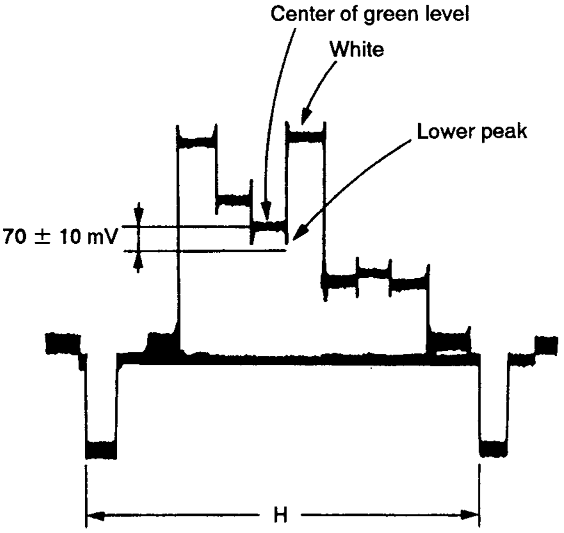


Fig. 7-24.

7-2-20. Max. Gain Adjustment (CV-9 Board)

Subject	Color bar chart standard picture frame
Filter	ND filters 1.0 (two) and 0.3 (two)
Measurement Point	Pin (B8) (VIDEO OUT) of check point array
Measuring Instrument	Oscilloscope
Adjustment Address	28 (MAX GAIN)
Specified Value	170 ± 10 mV

Adjustment method:

1) Cover the lens with the ND filter 2.6 (1.0+1.0+0.3+0.3).
2) Set the adjustment address to 28 with the adjustment remote controller.
3) Change the adjustment data with the adjustment remote controller to set the Y signal level to 170 ± 10 mV.
4) Change the adjustment address to store the adjustment data in the memory.

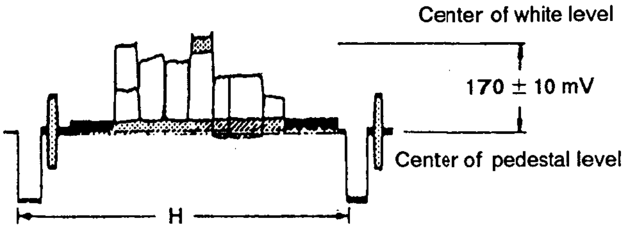


Fig. 7-25.

7-2-21. Chroma Level Adjustment (CV-9 Board)

Subject	Color bar chart standard picture frame
Measurement Point	Pin (A1) (G OUT) of check point array
Measuring Instrument	Oscilloscope
Adjustment Address	09 (C LEVEL)
Specified Value	320 ± 20 mVp-p

Connections:

1) Connect Pin (B7) (MODE) of the check point array to GND using a jumper wire.

Adjustment method:

1) Set the adjustment address to 09 with the adjustment remote controller.
2) Change the adjustment data with the adjustment remote controller to set the G OUT signal level to 320 ± 20 mVp-p.
3) Change the adjustment address to store the adjustment data in the memory.

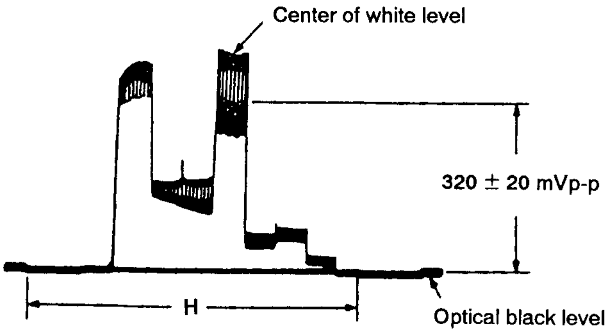


Fig. 7-26.

7-2-22. Indoor White Balance Adjustment (Method Using Vectorscope)

Subject	White pattern standard picture frame
Measurement Point	Video output terminals
Measuring Instrument	Vectorscope
Adjustment Address	11 (R GAIN) 12 (B GAIN)
Specified Value	The white luminance point is within a circle with a diameter of 1 mm centered around the origin.

Adjustment method:

1) Set the adjustment address to 11 with the adjustment remote controller.
2) Change the adjustment data with the adjustment remote controller to move the white luminance point to the origin point.
3) Set the adjustment address to 12.
4) Change the adjustment data to move the white luminance point to the origin point.
5) Repeat steps 1) through 4).
6) Change the adjustment address to store the adjustment data in the memory.

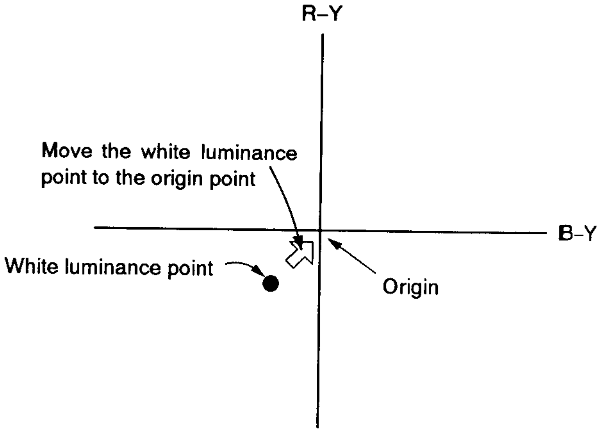


Fig. 7-27.

7-2-23. Indoor White Balance Adjustment (Method Using Oscilloscope) (CV-9 Board)

Subject	White pattern
Measurement Point	CH1 (X): Pin (B2) (B–Y) of check point array or collector of Q643 CH2 (Y): Pin (B1) (R–Y) of check point array or collector of Q613
Measuring Instrument	Oscilloscope (X-Y mode)
Adjustment Address	11 (R GAIN) 12 (B GAIN)
Specified Value	Move the white luminance point to the black luminance point.

Adjustment method:

1) Set the adjustment address to 11 with the adjustment remote controller.
2) Change the adjustment data with the adjustment remote controller to move the white luminance point with the black luminance point.
3) Set the adjustment address to 12.
4) Change the adjustment data to move the white luminance point to the black luminance point.
5) Repeat steps 1) through 4).
6) Change the adjustment address to store the adjustment data in the memory.

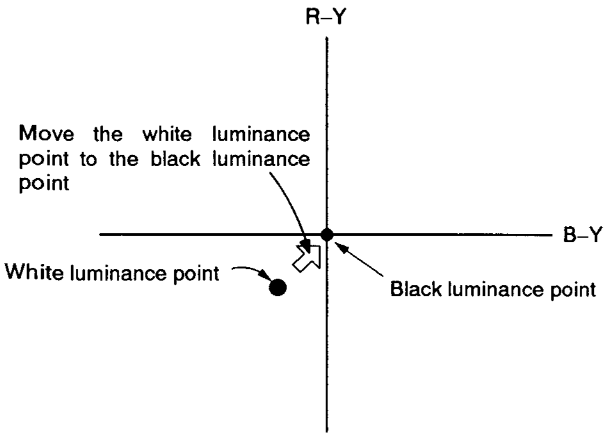


Fig. 7-28.

7-2-24. Burst Phase Adjustment (Method Using Vectorscope)

Subject	All black (cover lens with black cap)
Measurement Point	Video output terminals
Measuring Instrument	Vectrscope
Adjustment Address	16 (HUE CONT)
Specified Value	135° ± 1°

Adjustment method:

1) Set adjustment address to 16 with the adjustment remote controller.
2) Change adjustment data so as to set the burst luminance point in the 135° ± 1° position.
3) Change the adjustment address to store the adjustment data in the memory.
4) Perform Burst Level Adjustment.

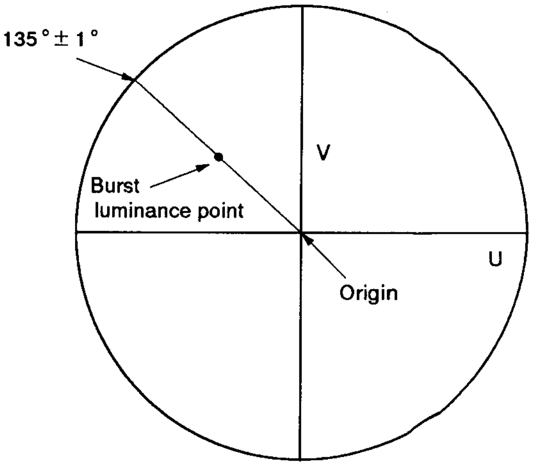


Fig. 7-29.

7-2-25. Burst Phase Adjustment (CV-9 Board) (Mothod Using Oscilloscope)

Subject	All black (cover lens with black cap)
Measurement Point	Pin (B8) (VIDEO OUT) of check point array
Measuring Instrument	Oscilloscope (Trigger slope:+)
Adjustment Address	16 (HUE CONT)
Specified Value	Burst phase should become a single line.

Adjusing method:

1) Set adjustment address to 16 with the adjustment remote controller.
2) Change the adjustment data so as to turn the burst waveform into a single line.
3) Change the adjustment address to store the adjustment data in the memory.
4) Perform Burst Level Adjustment.

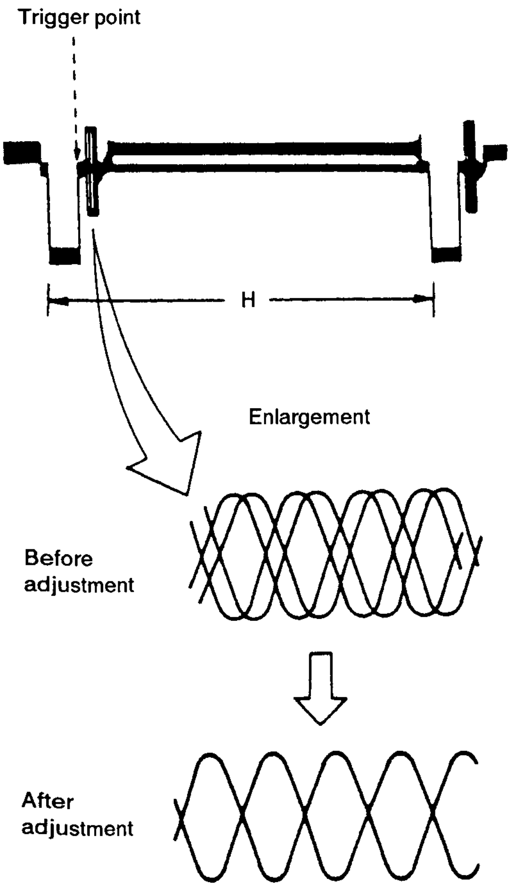


Fig. 7-30.

7-2-26. Burst Level Adjustment (CV-9 Board)

Subject	All black (cover lens with black cap)
Measurement Point	Pin (B8) (VIDEO OUT) of check point array
Measuring Instrument	Oscilloscope
Adjustment Address	22 (BURST LEVEL)
Specified Value	150 ± 5 mVp-p

Adjustment method:

1) Set the adjustment address to 22 with the adjustment remote controller.
2) Change the adjustment data with the adjustment remote controller to set the burst level to 150 ± 5 mVp-p.
3) Change the adjustment address to store the adjustment data in the memory.

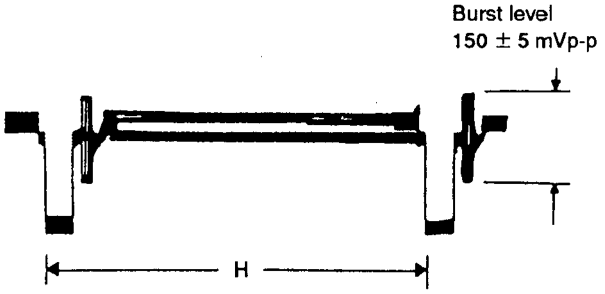


Fig. 7-31.

7-2-27. Color Reproduction Adjustment (Method Using Vectorscope)

Subject	Color bar chart standard picture frame
Measurement Point	Video output terminals
Measuring Instrument	Vectorscope
Adjustment Address	05 (R-Y GAIN) 06 (B-Y GAIN) 07 (B-Y HUE) 08 (R-Y HUE)
Specified Value	All color luminance points are within color reproduction frame.

Note: Confirm that Burst Phase Adjustment, Burst Level Adjustment and Indoor White Balance Adjustment have been completed.

Adjustment method:

1) Adjust the phase and gain of the vectorscope to set the burst luminance points to the designated position on the color reproduction frame.
2) Change the adjustment data at the various adjustment addresses using the adjustment remote controller until all color luminance points are within the color reproduction frame.
3) Change the adjustment address to store the adjustment data in the memory.

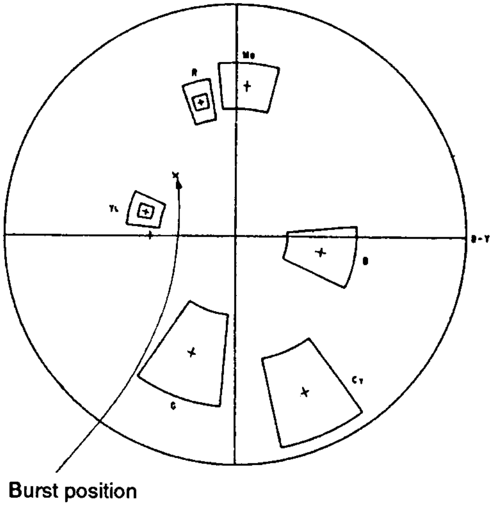


Fig. 7-32.

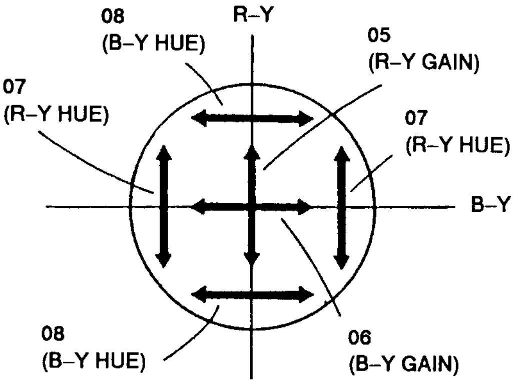


Fig. 7-33. Adjustment address and direction of luminance point movement

7-2-28. Color Reproduction Adjustment (Method Using Oscilloscope)

1. Gain adjustment (CV-9 board)

Subject	Color bar chart standard picture frame
Measurement Point	Pin (B8) (VIDEO OUT) of check point array
Measuring Instrument	Oscilloscope
Adjustment Address	05 (R-Y GAIN) 06 (B-Y GAIN)
Specified Value	Red level: 244 ± 15 mVp-p Yellow level: 180 ± 11 mVp-p

Note: Confirm that Indoor White Balance Adjustment has been completed.

Adjustment method:

1) Set the adjustment address to 06 with the adjustment remote controller and set the adjustment data to B0.
2) Set the adjustment address to 07 and set the adjustment data to B0.
3) Set the adjustment address to 08 and set the adjustment data to B0.
4) Set the adjustment address to 05 and change the adjustment data to set the chroma signal red level to 244 ± 15 mVp-p.
5) Set the adjustment address to 06 and change the adjustment data to set the chroma signal yellow level to 180 ± 11 mVp-p.
6) Repeat steps 4) and 5).
7) Change the adjustment address to store the adjustment data in the memory.
8) Perform Hue Adjustment.

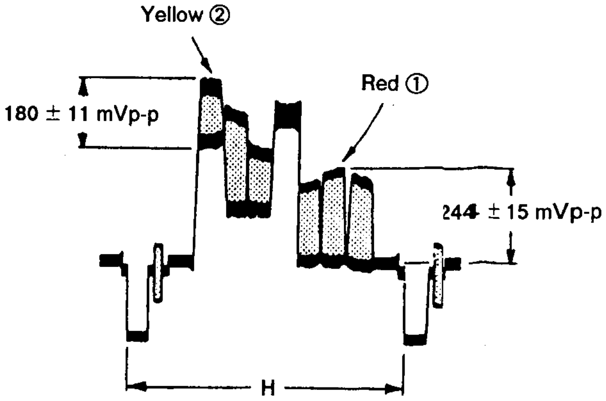


Fig. 7-34.

2. Hue adjustment

Subject	Color bar chart standard picture frame
Measurement Point	CH1 (X): Pin (B2) (B–Y) of check point array or collector of Q643 CH2 (Y): Pin (B1) (R–Y) of check point array or collector of Q613
Measuring Instrument	Oscilloscope (X-Y mode)
Adjustment Address	07 (R–Y HUE) 08 (B–Y HUE)
Specified Value	Various color luminance points within color reproduction frame.

Note: Make sure that Indoor White Balance Adjustment has been completed.

Adjustment method:

1) Move the black luminance point on the oscilloscope to the origin point of the color reproduction frame.
2) Change the adjustment data at adjustment addresses 07 and 08 with the adjustment remote controller to bring the various color luminance points into the color reproduction frame.
3) Check the hue reproduced on the monitor TV and fine adjust the adjustment data at adjustment addresses 07 and 08 if necessary.
4) Change the adjustment address to store the adjustment data in the memory.

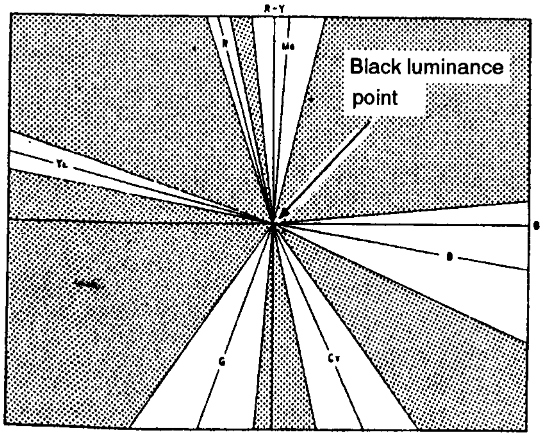


Fig. 7-35.

7-2-29. Auto White Balance Adjustment

Note: Be sure to first perform Preset Adjustment followed by Auto White Balance Adjustment.

1. Preset adjustment (CV-9 board)

Subject	White pattern standard picture frame

Note: 1) Perform preset adjustment after supplying power to the unit for at least 30 seconds.
2) When performing preset adjustment again, repeat after first turning the power off and then back on.

Preparations:

1) Prepare a 1 kΩ resistor for connecting Pin (B5) (AWB ADJ) of the check point array and Pin ④ (CAM 5V) of W902.

Adjustment method:

1) Turn the power OFF and then ON, and connect Pin (B6) (CAM ADJ) of the check point array to GND using a jumper wire.
2) Select adjustment address 89 (AWB MODE) and set the adjustment data to E0. Wait at least five seconds.
3) Change the adjustment address to store the adjustment data in the memory. Wait at least five seconds.
4) Remove the jumper wire between Pin (B6) (CAM ADJ) of the check point array and GND.
5) Connect Pin (B5) (AWB ADJ) of the check point array and Pin ④ of W902 (CAM 5V)with a 1 kΩ resistor.
6) Connect Pin (B6) (CAM ADJ) of the check point array to GND using a jumper wire.
7) Connect that the indication (adjustment address 01) of the adjustment remote controller is changed.
8) Remove the jumper wire connected to Pin (B6) (CAM ADJ) of the check point array after allowing one second or more to elapse.
9) Remove the 1 kΩ resistor connected to Pin (B5) (AWB ADJ) of the check point array.
10) Connect Pin (B6) (CAM ADJ) of the check point array to GND using a jumper wire.

2. Auto white balance adjustment (CV-9 board)

Note: Be sure to perform this adjustment after completing Preset Adjustment.

Subject	White pattern standard picture frame
Filter	Filter C14 for color temperature correction
Measuring Instrument	Oscilloscope (X-Y Mode)
Measurement Point	CH1 (X): Pin (B2) (B–Y) of check point array or collector of Q643 CH2 (Y): Pin (B1) (R–Y) of check point array or collector of Q613
Adjustment Address	01 (DELTA R) 02 (DELTA B) 80 (R OUTDOOR) 81 (B OUTDOOR) 77 (B UP LIMIT) 78 (R OUT LIMIT) 79 (B OUT LIMIT) 65 (TOP SLP R) 66 (TOP SLP R) 73 (TOP UP) 74 (TOP DWN)
Specified Value	Move the white luminance point to the black luminance point.

Note: 1) Make connection to the video output terminals when the vectorscope is used.
2) All calculations in this section are made in decimal.

Adjustment method:

1) Select adjustment address 89 (AWB MODE) with the adjustment remote controller and enter adjustment data of 10.
2) Change the adjustment data of adjustment addresses 01 and 02 with the adjustment remote controller to move the white luminance point and black luminance point.
(Move the white luminance point to pthe origin point when using the vectorscope.)
The adjustment data of adjustment address 01 is D_1 and the adjustment data of adjustment address 02 is D_2.
3) Select adjustment address 78 to enter adjustment data D_1.
4) Convert adjustment data D_1 to decimal to obtain D_1'.
Convert adjustment data D_2 to decimal to obtain D_2'.
(See Table 7-5 Hexadecimal-Decimal Conversion Table)
5) Obtain D_{80}' and D_{81}' by the following formula.
$D_{80}'=D_1'+1$
$D_{81}'=D_2'+3$
6) Convert D_{80}' and D_{81}' to hexadecimal and call this value D_{80} and D_{81}.
7) Select adjustment address 80 and enter adjustment data D_{80}.
Select adjustment address 81 and enter adjustment data D_{81}.
(Outdoor white balance adjustment.)
8) Obtain D_{77}' by the following formula.
$D_{77}'=(D_2' \times 1.9)-43.2$
9) Convert D_{77}' to hexadecimal and call this value D_{77}.
(Round off the decimal portion)
10) Select adjustment address 77 with the adjustment remote controller and enter adjustment data D_{77}.
11) Obtain D_{79}' by the following formula.
$D_{79}'=D_2'+10$
12) Convert D_{79}' to hexadecimal and call this value D_{79}.
13) Select adjustment address 79 with the adjustment remote controller and enter adjustment data D_{79}.
14) Obtain d' by the following formula.
$d'=(D_1' \times 5)+D_2'$
The adjustment procedure in 15) through 17) varies according to the value of d'.

[d' > 308]

15) Obtain D_{73}' and D_{74}' by the following formulas.
$D_{73}'=(D_1' \times 3)+(D_2' \div 2)+30$
$D_{74}'=D_{73}'-42$
16) Convert D_{73}' and D_{74}' to hexadecimal and call these values D_{73} and D_{74}.
(Round off the decimal portion)
17) Use the adjustment remote controller to enter the adjustment data shown in the table below for the indicated adjustment addresses.

Adjustment address	Adjustment data
65	20
66	01
73	D_{73}
74	D_{74}

Perform the adjustment steps beginning from 18).

[308 ≧ d' ≧ 286]

15) Obtain D_{73}' and D_{74}' by the following formulas.
$D_{73}'=(d' \div 2)+25$
$D_{74}'=D_{73}'-39$
16) Convert D_{73}' and D_{74}' to hexadecimal and call these values D_{73} and D_{74}.
(Round off the decimal portion)
17) Use the adjustment remote controller to enter the adjustment data shown in the table below for the indicated adjustment addresses.

Adjustment address	Adjustment data
65	41
66	01
73	D_{73}
74	D_{74}

Perform the adjustment steps beginning from 18).

[286 > d']

15) Obtain D_{73}' and D_{74}' by the following formulas.
$D_{73}'=(D_1' \times 3)+D_2'+30$
$D_{74}'=D_{73}'-42$
16) Convert D_{73}' and D_{74}' to hexadecimal and call these values D_{73} and D_{74}. (Round off the decimal portion)
17) Use the adjustment remote controller to enter the adjustment data shown in the table below for the indicated adjustment addresses.

Adjustment address	Adjustment data
65	20
66	00
73	D_{73}
74	D_{74}

18) Select adjustment address 89 and enter adjustment data 00.
19) Select adjustment address 89 and enter adjustment data F0.
20) Change the adjustment data of adjustment addresses 01 and 02 with the adjustment remote controller to move the white luminance point and black luminance point.
(Move the white luminance point to the origin point when using the vectorscope.)
21) Select adjustment address 89 and enter adjustment data of 00.
22) Change the adjustment address to store the adjustment data in the memory.

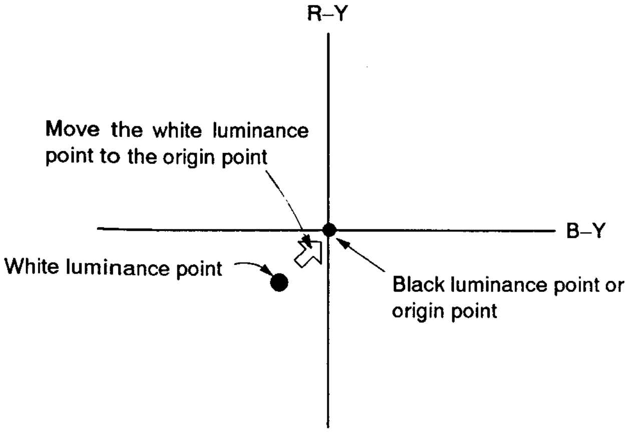

R-Y
Move the white luminance point to the origin point
B-Y
White luminance point
Black luminance point or origin point

Fig. 7-36.

(Example)
When the adjustment data obtained in Step 2) has the following values.

Adjustment address	Adjustment data
01	2A
02	53

→ Entered into adjustment address 78.

D_1=2A and D_2=53 when there is conversion to decimal using Table 7-5.
$D_1'=42$
$D_2'=83$

Thus,
$D_{80}'=42+1=43$
$D_{81}'=83+3=86$
$D_{77}'=(83 \times 1.9)-43.2=114.5$

Rounding off the decimal portion and converting to hexadecimal by Table 7-5 results in,
D_{80}=2B → Entered into adjustment address 80.
D_{81}=56 → Entered into adjustment address 81.
D_{77}=72 → Entered into adjustment address 77
In the same manner,
$D_{79}'=(83+10)=93$
D_{79}=5D → Entered into adjustment address 79

In addition,
$d'=(42 \times 5)+83=293$

Thus, $[308 \geqq d' \geqq 286]$
$D_{73}'=(293 \div 2)+25=171.5$
$\therefore$ D_{73}=AC → Entered into adjustment address 73
$D_{74}'=171.5-39=132.5$
$\therefore$ D_{74}=85 → Entered into adjustment address 74

Also, adjustment data of 41 is entered into adjustment address 65, and adjustment data of 01 is entered into adjustment address 66. The steps beginning from 18) are then performed.

7-2-30. Outdoor White Balance Confirmation (CV-9 Board)

Subject	White pattern standard picture frame
Filter	Filter C14 for color temperature correction
Measurement Point	When vectorscope used: video output terminals When oscilloscope used: CH1 (X): Pin B2 (B–Y) of check point array or collector of Q643 CH2 (Y): Pin B1 (R–Y) of check point array or collector of Q613
Measuring Instrument	
Specified Value	See Fig. 7-37.

Connections:

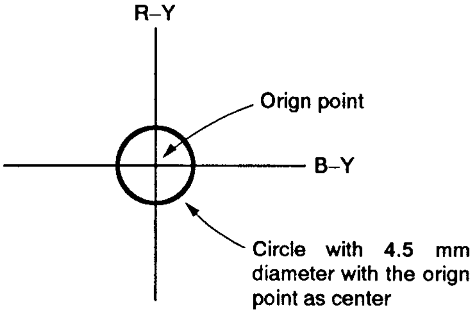
1) Remove the jumper wire connected to Pin B6 (CAM ADJ) of the check point array. (Turns off the EVR adjustment mode)

Checking method:

1) Press the white balance button to select the outdoor white balance mode. (☀ mark is displayed on EVF screen or monitor TV screen (when data screen ON).)
2) Confirm that the center of the white luminance point is within the circle shown in the figure below.

   Note: When using a vectorscope, adjust the GAIN and PHASE of the vectorscope so that burst luminance point move to with the burst position of the color reproduction frame.

[When using vectorscope]



[When using oscilloscope]

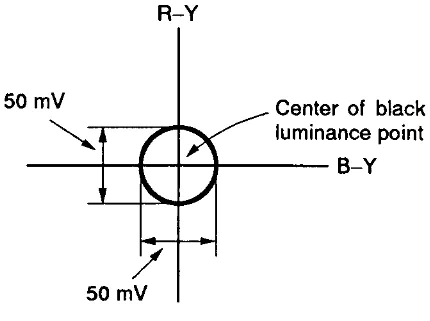


Fig. 7-37.

7-2-31. Focus Motor Speed Adjustment (CV-9 Board)

Subject	Arbitrary
Measurement Point	CN803
Measuring Instrument	AF microcomputer data reading jig
Adjustment Address	A26 (FOCUS SPEED)
Specified Value	Average value of data indicated on jig=4.0 ± 0.5

Remarks: The rotation time from the close extreme to far extreme of the focus ring should be approximately 2.1 seconds after completion of adjustment.

Adjustment method:

1) Turn on the auto focus with FOCUS button (S655 on CK-19P board).
2) Select adjustment address 37 with the adjustment remote controller and enter adjustment data of 01. (Sets hunching mode)
3) Set the adjustment address to 26.
4) Change the adjustment data so that the indication on the AF microcomputer data reading jig is 04 while the ring is rotating.
5) Press the HOLD button of the AF microcomputer data reading jig while the focus ring is rotating to read the indication value.
6) Repeat step 4) ten times and obtain the average value.
   Specified value=4.0 ± 0.5
   Repeat steps 3) and 4) if the specified value is not satisfied.
7) Set the adjustment address to 37 and set the adjustment data to 00. (Releases hunching mode)
8) Change the adjustment address to store the adjustment data in the memory.

7-2-32. Macro Area Adjustment (CV-9 Board)

Subject	Arbitrary
Measurement Point	CN803
Measuring Instrument	AF microcomputer data reading jig
Adjustment Address	39 (MACRO)
Specified Value	(Value at WIDE position) +3

Adjustment method:

1) Set the zoom ring to the WIDE position (8.5 mm position).
2) Select adjustment address 37 with the adjustment remote controller and set the adjustment data to 03. (Sets zoom position indication mode)
3) Read the data indicated on the AF microcomputer data reading jig. (Data in the range of 00 to 0E is displayed if normal.)
4) Change the adjustment address to 39.
5) Add 3 to the data read from jig and enter as the adjustment data.
6) Change the adjustment address to 37 and set the adjustment data to 00. (Releases zoom position indication mode)
7) Change the adjustment address to store the adjustment data in the memory.

7-2-33. Auto-Focus LLA Adjustment (CV-9 Board)

Subject	All black (cover lens with black cap)
Measurement Point	CN803
Measuring Instrument	AF microcomputer data reading jig
Adjustment Address	38 (LLA)
Specified Value	(Value indicated on jig) –2

Adjustment method:

1) Select adjustment address 37 with the adjustment remote controller and set to 0B as the adjustment data. (Sets auto-focus LLA adjustment mode)
2) Read the data indicated on the AF microcomputer data reading jig and call this value D.
3) Subtract 2 from D and make this value the LLA data.
   (See Table 7-5. Hexadecimal-Decimal Conversion Table)

   (Example)
   When D=30 (48), LLA data is 2D (46)
   When D=31 (49), LLA data is 2F (47)
   ( ) is decimal equivalent

4) Select adjustment address 38 with the adjustment remote controller and enter the LLA data as the adjustment data.
5) Select adjustment address 37 and set 00 as the adjustment data. (Releases auto-focus LLA adjustment mode)
6) Change the adjustment address to store the adjustment data in the memory.

7-2-34. Auto-Focus Adjustment

1. Adjustment in all black pattern (CV-9 board)

Subject	All black (cover lens with black cap)
Measurement Point	CN803
Measuring Instrument	AF microcomputer data reading jig
Adjustment Address	42 (BASE-H)

Adjustment method:

1) Turn off the auto-focus with the FOCUS button (S655 on CK-19P board).
2) Select adjustment address 37 with the adjustment remote controller and enter adjustment data of FF.
3) Read the indication on the AF microcomputer data reading jig and confirmm this value (FHB). (FHB should be 00 to 07.)
4) Obtain adjustment data D42 according to the following formulas.
   When FHB=0
      D42=03
   When FHB > 0
      D42=FHB+2   * Hexadecimal calculations
5) Select adjustment address 42 with the adjustment remote controller and enter D42 as the adjustment data.
6) Select adjustment address 37 and enter adjustment data of 00.
7) Change the adjustment address to store the adjustment data in the memory.
8) Perform "Adjustment in white pattern" .

2. Adjustment in white pattern (CV-9 board)

Subject	White pattern standard picture frame (Position 1.5 m from the front of the lens reference plane (ϕ mark))
Measurement Point	CN803
Measuring Instrument	AF microcomputer data reading jig
Adjustment Address	41 (LOW CONT)

Measurement method:

1) Confirm that the white pattern is not soiled.
2) Confirm that the auto-focus is turned off.
3) Select adjustment address 37 with the adjustment remote controller and enter adjustment data of FD.
4) Read the indication of the AF microcomputer data reading jig and confirm this value (FAW). (FAW shoud be 00 to 03)
5) Obtain adjustment data D41 according to the following formulas.
      D41=FAW+3
6) Select adjustment address 41 with the adjustment remote controller and enter D41 as the adjustment data.
7) Select adjustment address 37 and enter adjustment data of 00.
8) Chenge the adjustment address to store the adjustment data.
9) Perform "Adjustment in Siemens star" .

3. Adjustment in Siemens star (CV-9 board)

Subject	Siemens Star (1.5m in front of the lens reference surface (ф mark))
Measurement Point	CN803
Measuring Instrument	AF microcomputer data reading jig
Adjustment Address	49 (KATAMUKI)
Specified Value	03 ≦ KATAMUKI<0D

Measurement method:

1) Place the Siemens Star 1.5m in front of the lens reference surface (see Fig. 7-2).
2) Set the zoom lever to the TELE end (68 mm) and turn auto-focus off with the FOCUS button (S655 on the CK-19P board).
3) Adjust camera position so that the center of the Siemens Star displayed on the monitor coincides with the center of the monitor screen.

Illumination Adjustment:

1) Select adjustment address 37 and input adjustment data 09 with the adjustment remote controller (this will cause iris condition to be displayed on the AF microcomputer data reading jig (henceforth referred to as AF jig)).
2) Put a black cap on the lens and read the AF jig indication (value for fully-open iris).
3) Remove the black cap and confirm that the AF jig indication drops below the fully-open value (in case the iris remains fully open, increase Siemens Star illumination).
4) Lower Siemens Star illumination gradually (if using ND filters, gradually increase the ND value). Stop when the AF jig indication reaches the fully-open iris value-2 from the fully-open iris value. (Confirm that the screen does not get dark.)

Auto-focus Adjustment:

1) Set the focus ring to the close-range end (1.2m) and the zoom lever to the TELE end (68 mm), then turn auto-focus on with the FOCUS button.
2) After 2.0 seconds, confirm that the Siemens Star is being clearly reproduced, then press the FOCUS button to turn auto-focus off.
3) Select adjustment address 37 and input adjustment data FF with the adjustment remote controller (the auto-focus filter will be set to the FH side).
4) Read the AF jig indication, and call the data D, and then convert it to the decimal number D'. Then obtain FHSM' by the following formula:
   FHSM'=D'/2.5
   (FHSM' shall be within 16 to 55)
5) Select adjustment address 37 and input adjustment data FD with the adjustment remote controller (the auto-focus filter will be set to the FA side).
6) Read the AF jig indication, and call the data D, and then convert it to the decimal number D'. Then obtain FASM' by the following formula:
   FASM'=D'/1.6
   (FASM' shall be within 78 to 112)
7) Obtain D_{49}' by the following formula:
   $$D_{49}' = \frac{FHSM' - FHB - 4}{FASM' - 40} \times 16$$
   - FHB is the adjustment data for the all-black pattern.
8) Convert D_{49}' to the hexadecimal number D_{49} (Round off the decimal portion. D_{49} shall be within 03 to 0D).
9) Select adjustment address 49 and input adjustment data D_{49}.
10) Select adjustment address 37 and input adjustment data 00.

7-2-35. Auto-Focus Confirmation

Subject	Siemens star (position 1.5m from the front of the lens reference plane ("Φ" mark)

Note: Perform adjustment with the EVF (electronic viewfinder) attached.

Measuring method:

1) Place the Siemens star 1.5m from the front of the lens reference surface (See Fig. 7-2.).
2) Set the zoom lever to the TELE position (68 mm) and turn on auto focus with the FOCUS button.
3) Adjust the direction of the camera so that center of the Siemens star is lined up with the center of the monitor screen on the monitor TV screen.
4) To open the iris, reduce the illumination of the Siemens star to the range in which the ■ mark in the upper center of the EVF screen does not light up.
   (Or cover lens with the ND filter)
5) Turn off the auto-focus with the FOCUS button.
6) Manually rotate the focus ring to set the focus. Confirm that the focus mark is inside the range shown in Fig. 7-38 at this time.
   Perform Flange Back Adjustment if this condition is not satisfied.
7) Rotate the focus ring to the close extreme (1.2m).
8) Turn on the auto-focus with the FOCUS button.
9) Confirm that there is focusing within two seconds and a sharp image can be obtained.
10) Turn off the auto-focus and rotate the focus to the far extreme (∞).
11) Turn on the auto-focus.
12) Confirm that there is focusing within three seconds and a sharp image can be obtained.

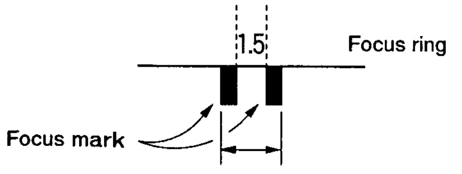

1.5
Focus ring
Focus mark
Confirm that focus mark is within this range

Fig. 7-38.

7-3. DIGITAL TITLER SYSTEM ADJUSTMENT

7-3-1. Titler PLL Adjustment (LI-10 Board)

Subject	Arbitrary
Measurement Point	C910 (see Fig. 7-39.)
Measuring Instrument	Digital voltmeter
Adjustment Address	CV901
Specified Value	2.5 ± 0.1 Vdc

Note: Remove the three boards LI-10, CK-19P and DK-4P together with their mounting frame before adjustment.

Connection:

1) Connect Pin ⑧ (SS5V) of IC901 to the check land (Pin (64) of IC902) with a jumper wire (see Fig. 7-40.).

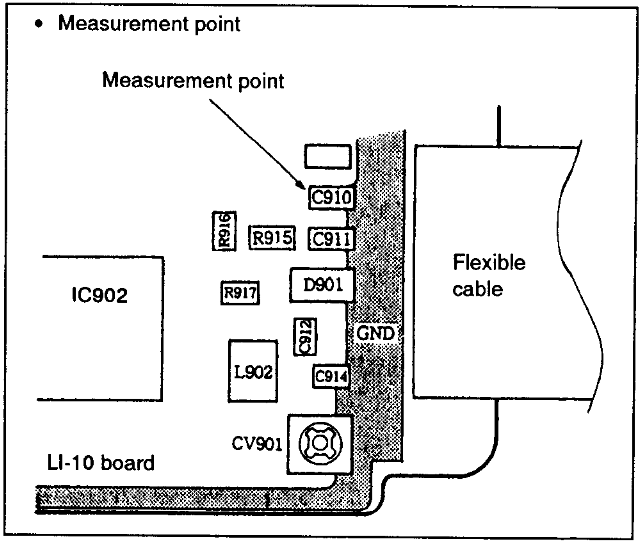
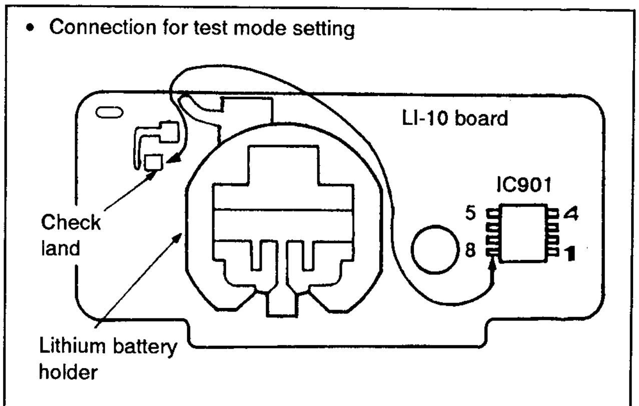

• Measurement point
Measurement point
C910
R916
R915
C911
IC902
R917
D901
Flexible cable
C912
GND
L902
C914
CV901
LI-10 board

Fig. 7-39.


• Connection for test mode setting
LI-10 board
IC901
5
4
8
1
Check land
Lithium battery holder

Connect Pin ⑧ (SS5V) of IC901 to the check land (Pin (64) of IC902) with a jumper wire.

Fig. 7-40.

Adjustment method:

1) Set to 2.5 ± 0.1 Vdc with CV901.

7-3-2. Title A/D Level Adjustment (LI-10 Board)

Subject	Color bar chart standard picture frame
Measurement Point	Check on the monitor screen
Measuring Instrument	
Adjustment Address	29 (TITLE A/D)
Specified Value	All areas except yellow, cyan, green and white sections must be superimposed (get white).

Note: Perform Y-level adjustment first.

Adjustment method:

1) Set adjustment address 29 with the adjustment remote controller.
2) Press the MEMORY button (S657 on the CK-19P board).
3) Confirm that all areas except yellow, cyan, green and white sections get white.
4) In case the condition in step 3) is not achieved, change adjustment data with the adjustment remote controller and repeat steps 2) and 3).
5) Change the adjustment address to store the adjustment data in the memory.

Shaded area must white

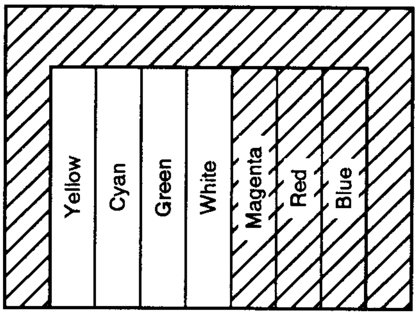


Fig. 7-41.

7-3-3. Title Pedestal Adjustment (CV-9 Board)

Subject	All-black (cover lens with black cap)
Measurement Point	Pin (B8) (VIDEO OUT) of the check point array or video output terminal
Measuring Instrument	Oscilloscope
Adjustment Address	03 (PED)
Specified Value	Minimum 4.43 MHz chroma component

Adjustment method:

1) Put a black cap on the lens and press the MEMORY button (S657 on the CK-19P board).
2) Turn the data screen on with the DATA SCREEN button (S509 on the VK-3P board) and confirm that the letters "T WHT" are displayed on the monitor screen (if the indication differs, press the COLOR button (S656 on the CK-19P board) and set it to "T WHT").
3) Set the adjustment address 03 with the adjustment remote controller.
4) Change adjustment data with the adjustment remote controller so as to minimize the 4.43 MHz chroma component.
5) Change the adjustment address to store the adjustment data in the memory.

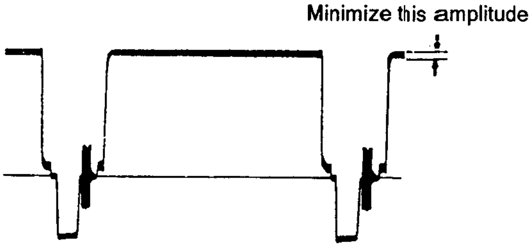


Fig. 7-42.

7-3-4. Title Y-level Adjustment (CV-9 Board)

Subject	All-black (over lens with black cap)
Measurement Point	Pin (B8) (VIDEO OUT)of the check point array
Measuring Instrument	Oscilloscope
Adjustment Address	24 (CHARACTER)
Specified Value	270 ± 40 mV

Adjustment method:

1) Put a black cap on the lens and press the MEMORY button (S657 on the CK-19P board).
2) Turn the data screen on with the DATA SCREEN button (S509 on the VK-3P board) and confirm that the letters "T WHT" are displayed on the monitor.
3) Set the adjustment address 24 with the adjustment remote controller.
4) Change adjustment data with the adjustment remote controller so that Y-signal level becomes 270 ± 40 mV.
5) Change the adjustment address to store the adjustment data in the memory.

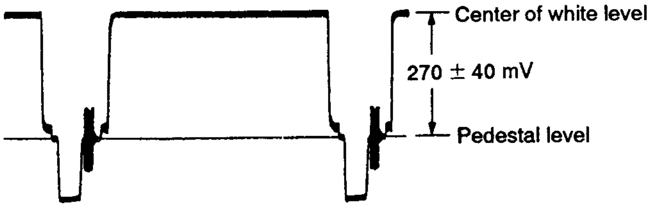


Fig. 7-43.

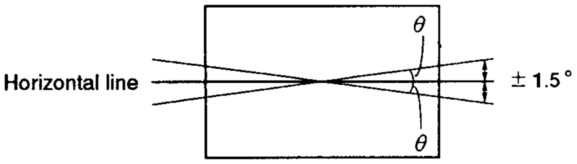
7-4. ELECTRONIC VIEWFINDER SYSTEM ADJUSTMENT(TYPE A) (VF-14P BOARD)

7-4-1. Horizontal Tilt Adjustment

Mode	Playback
Signal	Alignment tape for checking operation (WR5-5CSP) Monoscope portion
Specified Value	See Fig. 7-44.

Adjustment method:

1) By turning RV904 (BRIGHT), adjust for a luminance level which provides appropriate visibility of the CRT screen.
2) Loosen the DY (deflection yoke) tightening nut.
3) Make the image horizontal by rotating DY.
4) Retighten the DY tightening nut. (Do not tighten excessively.)


θ
Horizontal line
± 1.5 °
θ

Specified value: Image orientation within ± 1.5 ° of horizontal line.

Fig. 7-44.

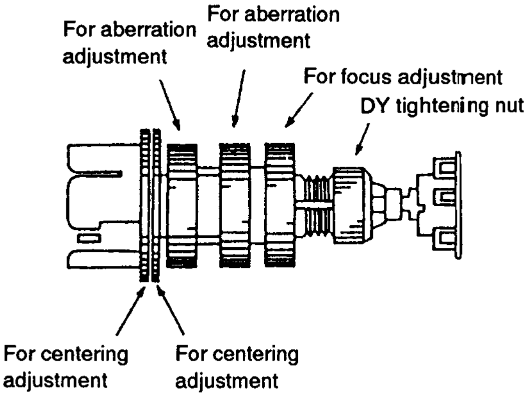

For aberration adjustment
For aberration adjustment
For focus adjustment
DY tightening nut
For centering adjustment
For centering adjustment

Fig. 7-45.

7-4-2. Centering Adjustment

Mode	Playback
Signal	Alignment tape for checking operation (WR5-5CSP) Monoscope portion
Specified Value	See Fig. 7-46.

Adjustment method:

1) Turn the centering adjustment rings to provide an image with even right, left, upper and lower margins. (See Fig. 7-45.)

Note: Since the centering position is affected by the earth magnetism, turn the equipment over 360 ° horizontally, and make adjustments at the orientation which exhibits median displacements of the image.

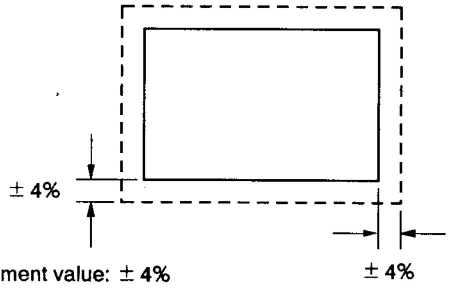


Fig. 7-46.

7-4-3. Focus Adjustment

Mode	Playback
Signal	Alignment tape for checking operation (WR5-5CSP) Monoscope portion

Adjustment method:

1) Adjust for optimum focus using the focus ring. (See Fig. 7-45.)

7-4-4. Aberration Adjustment

Mode	E-E
Signal	Dot pattern
Specified Value	See Fig. 7-47.

Adjustment method:

1) Use the aberration adjustment rings to adjust any trailing dots to within 2 times the dot diameter and any fan shaped aberrations to within the dot diameter.
2) If off center, repeat the Centering Adjustment.

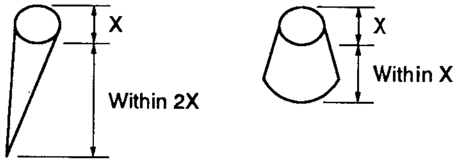


Fig. 7-47.

7-4-5. Horizontal Oscillation Frequency Adjustment

Mode	Playback
Signal	Alignment tape for checking operation (WR5-5CSP)
Measurement Point	Positive terminal of C904
Measuring Instrument	Digital voltmeter or oscilloscope (DC range)
Adjustment Element	RV901
Specified Value	2.60 ± 0.05 Vdc

Adjustment method:

1) Adjust to 2.60 ± 0.05 Vdc using RV901.

7-4-6. Horizontal Amplitude Adjustment

Mode	Playback
Signal	Alignment tape for checking operation (WR5-5CSP) Monoscope portion
Adjustment Element	C911
Specified Value	6 ± 3%

Adjustment method:

1) Line up the upper and lower sections of the monoscope image with the upper and lower edges of the screen by rotating RV902.
2) Rotate RV904 to set the brightness to the normal level.
3) Short or open the pattern (A) of the H size adjustment capacitor (C911) to provide horizontal overscans of 6 ± 3% (total of left and right). (See Fig. 7-49.)

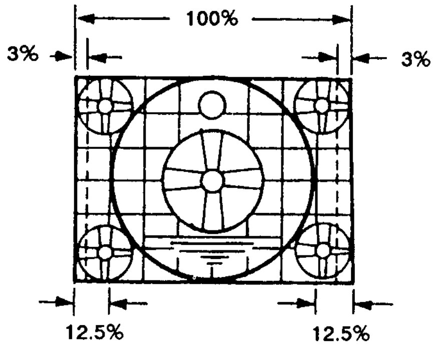
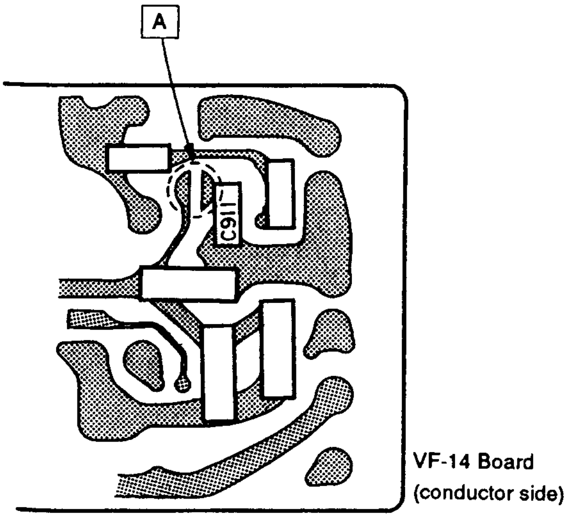


Fig. 7-48.



A section	H size
Open	Large
Short	Small

Fig. 7-49.

7-4-7. Vertical Amplitude Adjustment

Mode	Playback
Signal	Alignment tape for checking operation (WR5-5CSP) Monoscope portion
Adjustment Element	RV902
Specified Value	5 ± 3%

Adjustment method:

1) By turning RV902, adjust vertical overscan to 5 ± 3% (upper and lower total).

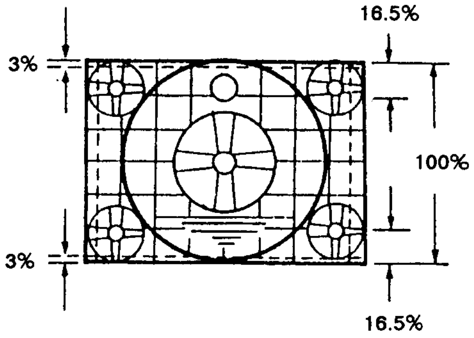


Fig. 7-50.

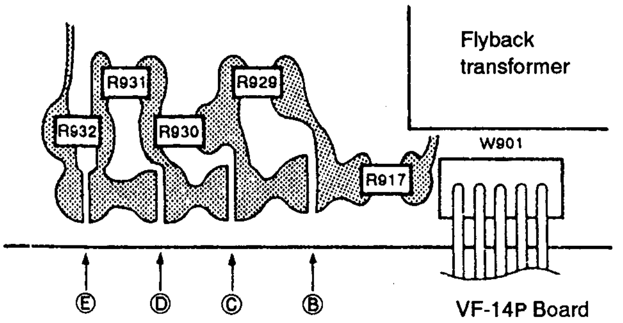
7-4-8. Brightness, Contrast Adjustments

Mode	Playback
Signal	Alignment tape for checking operation (WR5-5CSP) Monoscope portion
Adjustment Element	Brightness: RV904 Contrast: see Fig. 7-51.

Adjustment method:

1) Perform brightness and contrast adjustments alternately until the bright and dark areas of a gray scale are displayed correctly. (The bright areas should not be made too bright to avoid a fuzzy display of the cross-hatches in the monoscope circle, and the brightness of the dark areas should be such that discrimination between the darkest and second darkest area is possible.)

Use sections Ⓑ to Ⓔ of VF-14P board to open and short for contrast adjustment.



Sections to be shorted	Contrast
Ⓓ and Ⓔ	High
Ⓔ	↑
Ⓓ	
All open	
Ⓒ	
Ⓑ	↓
Ⓑ and Ⓒ	Low

Fig. 7-51.

7-4-9. Horizontal Amplitude, Vertical Amplitude and Focus Checks

Values should conform to specifications given in 7-4-6. Horizontal Amplitude Adjustment and 7-4-7. Vertical Amplitude Adjustment. If not, readjust accordingly, and repeat 7-4-8. Brightness, Contrast Adjustments. In this case, focus needs to be checked. If the image is not clear, perform 7-4-3. Focus Adjustment and 7-4-4. Aberration Adjustment.

7-5. ELECTRONIC VIEWFINDER SYSTEM ADJUSTMENT (TYPE B) (VF-22P BOARD)

7-5-1. Horizontal Tilt Adjustment

Mode	Playback
Signal	Alignment tape for checking operation (WR5-5CSP) Monoscope portion
Specified Value	See Fig. 7-53.

Adjustment method:

1) Adjust the volume array Ⓓ (BRIGHT) for appropriate brightness on CRT screen. (See Fig. 7-54.)
2) Loosen the DY (deflection yoke) tightening nut. (See Fig. 7-52.)
3) Make a picture horizontal by turning the DY.
4) Retighten the nut. (Do not tighten excessively.)

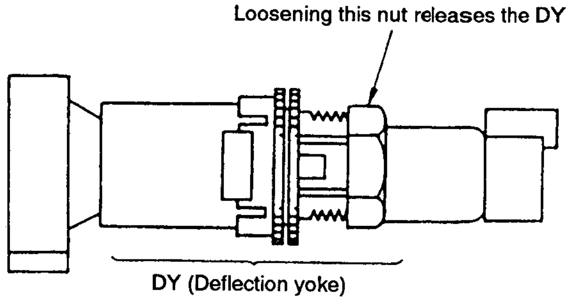
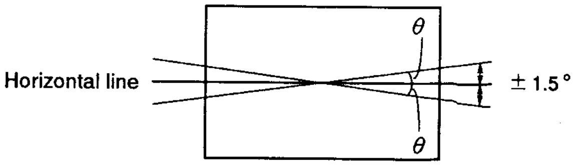
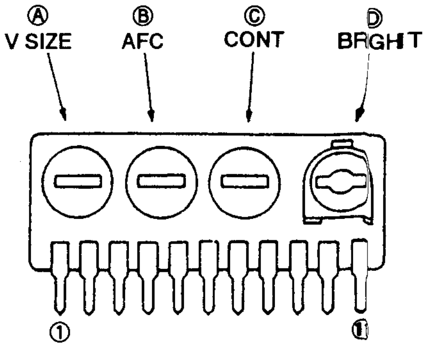


Fig. 7-52.



Specified value: Image orientation within ± 1.5 ° of horizontal line.

Fig. 7-53.



Volume array (CP901)

Fig. 7-54.

7-5-2. Centering Adjustment

Mode	Playback
Signal	Alignment tape for checking operation (WR5-5CSP) Monoscope portion
Specified Value	See Fig. 7-56.

Adjustment method:

1) Turn the centering adjustment rings to provide an image with even right, left, upper and lower margins. (See Fig. 7-55.)

Note: Since the centering position is affected by the earth magnetism, turn the equipment over 360 ° horizontally, and make adjustments at the orientation which exhibits median displacements of the image.

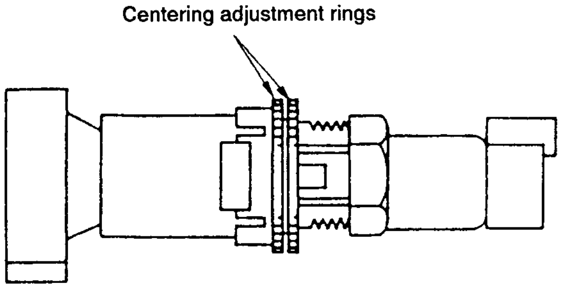


Fig. 7-55.

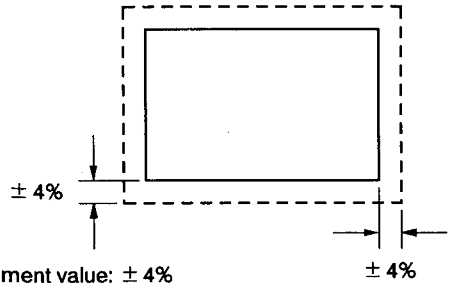


Fig. 7-56.

7-5-3. AFC Adjustment

Mode	E-E or Camera standby
Signal	Color bar
Measurement Point	C915 ⊕ side
Measuring Instrument	Digital voltmeter or oscilloscope (DC range)
Adjustment Element	Volume array Ⓑ (AFC)
Specified Value	2.6 ± 0.2 Vdc

Adjustment method:

1) Adjust volume array Ⓑ (AFC) for 2.6 ± 0.2 Vdc. (See Fig. 7-54.)

7-5-4. Horizontal Amplitude Adjustment

Mode	Playback
Signal	Alignment tape for checking operation (WR5-5CSP) Monoscope portion
Adjustment Element	C905
Specified Value	6 ± 3%

Adjustment method:

1) Line up the upper and lower sections of the monoscope image with the upper and lower edges of the screen by rotating volume array Ⓐ (V SIZE). (See Fig. 7-54.)
2) Rotate volume array Ⓓ (BRIGHT) to set the brightness to the normal level.
3) Short or open the pattern A of the H size adjustment capacitor (C905) to provide horizontal overscans of 6 ± 3% (total of left and right). (See Fig. 7-58.)

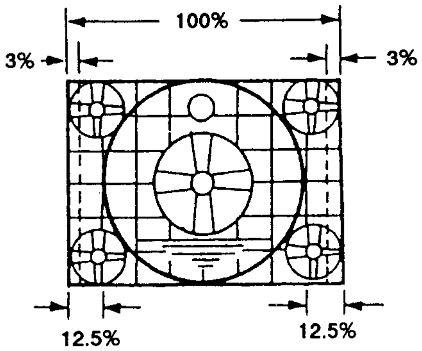
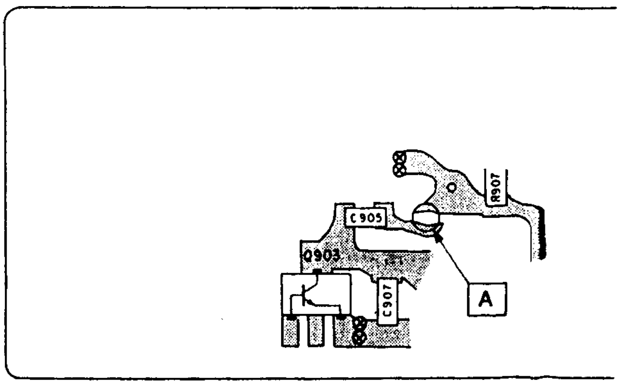


Fig. 7-57.



VF-22P board (conductor side)

A section	H size
Open	Large
Short	Small

Fig. 7-58.

7-5-5. Vertical Amplitude Adjustment

Mode	Playback
Signal	Alignment tape for checking operation (WR5-5CSP) Monoscope portion
Adjustment Element	Volume array Ⓐ (V SIZE)
Specified Value	5 ± 3%

Adjustment method:
1) By turning volume array Ⓐ (V SIZE), adjust vertical overscan to 5 ± 3% (upper and lower total). (See Fig. 7-54.)

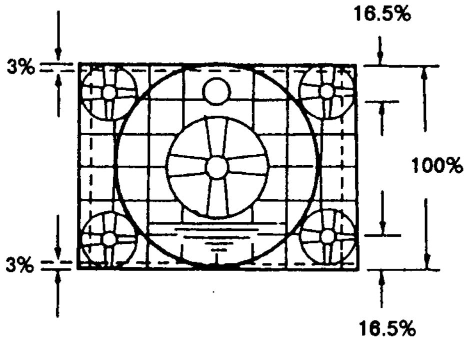


Fig. 7-59.

7-5-6. Focus Adjustment

Mode	Playback
Signal	Alignment tape for checking operation (WR5-5CSP) Monoscope portion
Adjustment Element	RV901

Adjustment method:
1) Adjust to the best focus point with RV901.

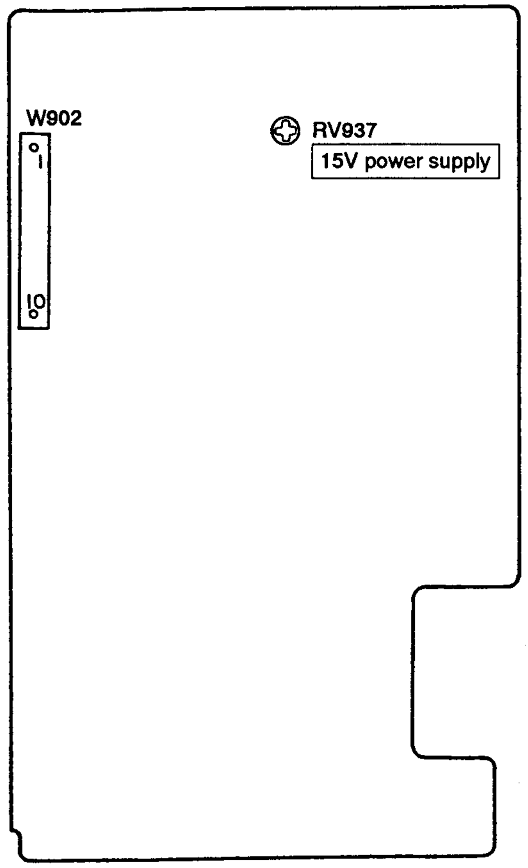
7-5-7. Brightness, Contrast Adjustments

Mode	Playback
Signal	Alignment tape for checking operation (WR5-5CSP) Monoscope portion
Adjustment Element	Brightness: Volume array Ⓓ (BRIGHT) Contrast: Volume array Ⓒ (CONT)

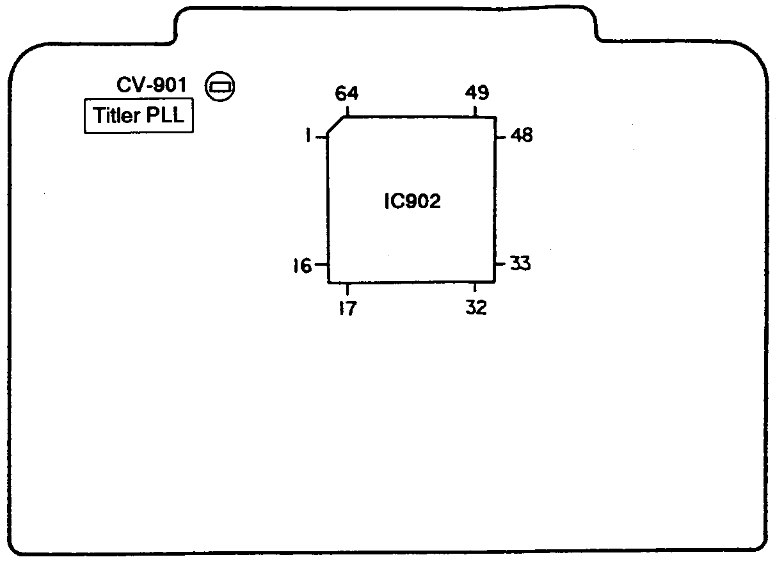
Adjustment method:
1) Adjust volume array Ⓓ (BRIGHT) and Ⓒ (CONT) alternately until the bright and dark areas of a gray scale are displayed correctly. (The bright areas should not be made too bright to avoid a fuzzy display of the cross-hatches in the monoscope circle, and the brightness of the dark areas should be such that discrimination between the darkest and second darkest area is possible.) (See Fig. 7-54.)

7-6. ADJUSTMENT ELEMENTS LOCATION

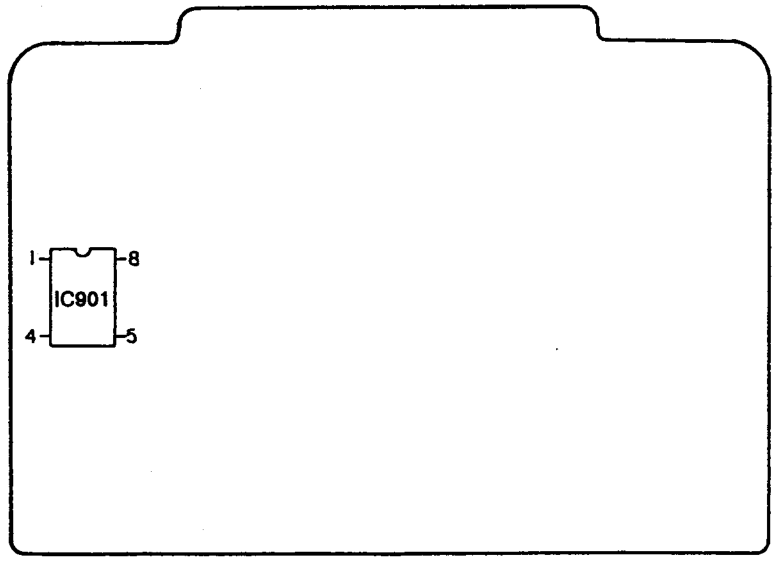
PS-225P BOARD (COMPONENT SIDE)


W902
1
10
RV937
15V power supply

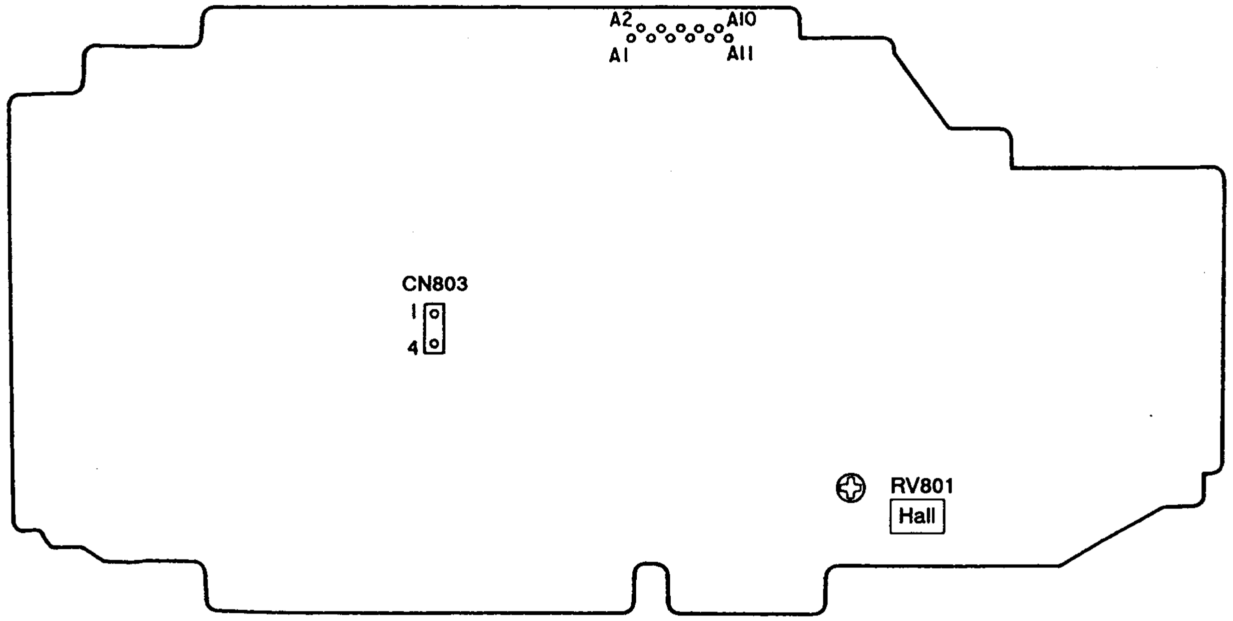
LI-10 BOARD (COMPONENT SIDE)


CV-901
Titler PLL
64
49
1
48
IC902
16
33
17
32

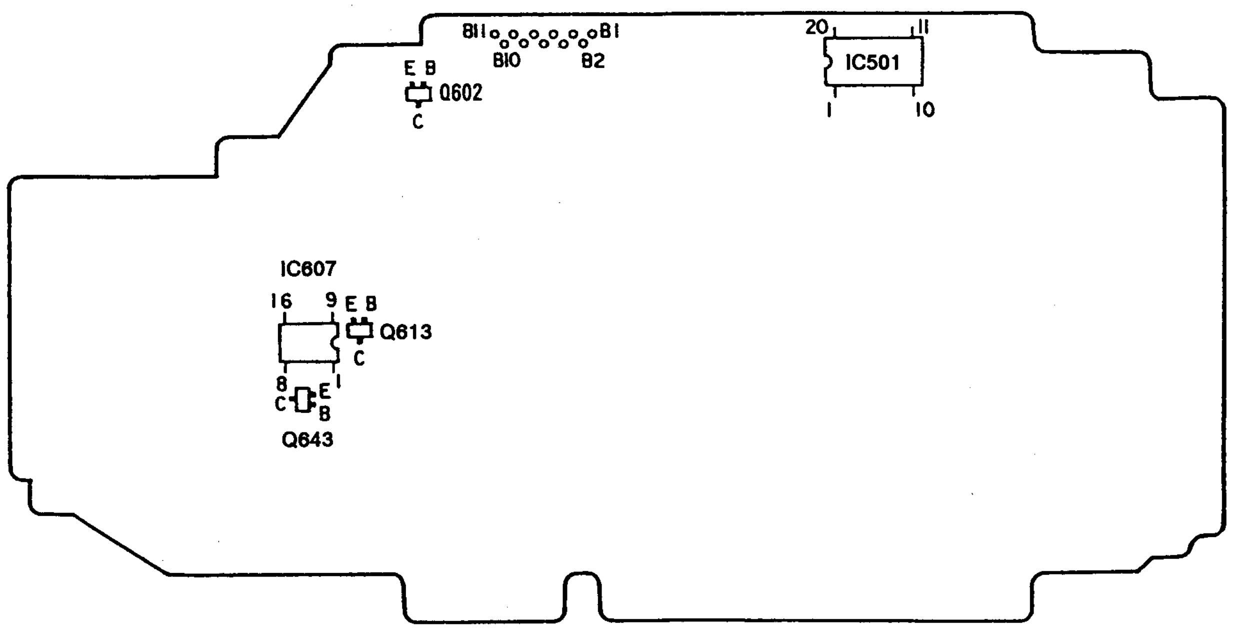
LI-10 BOARD (CONDUCTOR SIDE)



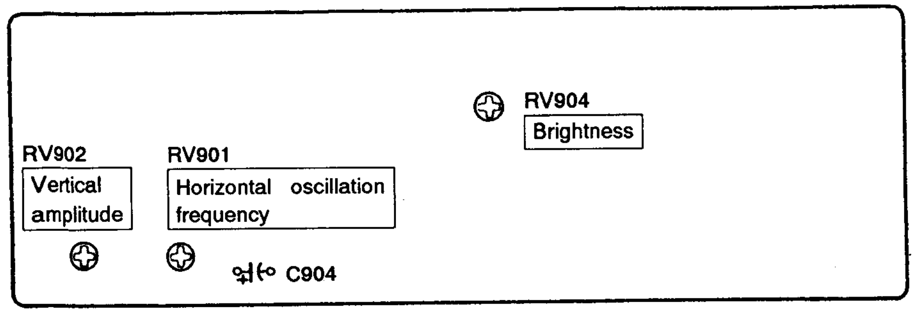
CV-9 BOARD (COMPONENT SIDE)


A2
A10
A1
A11
CN803
1
4
RV801
Hall

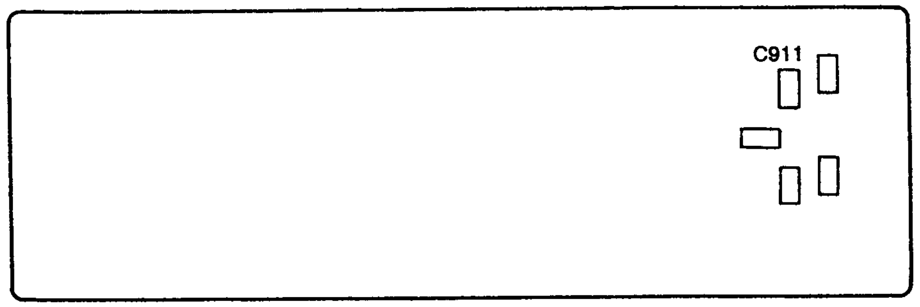
CV-9 BOARD (CONDUCTOR SIDE)


B11
B1
B10
B2
E B
Q602
C
20
11
IC501
1
10
IC607
16
9
E B
Q613
C
8
1
C
E
B
Q643

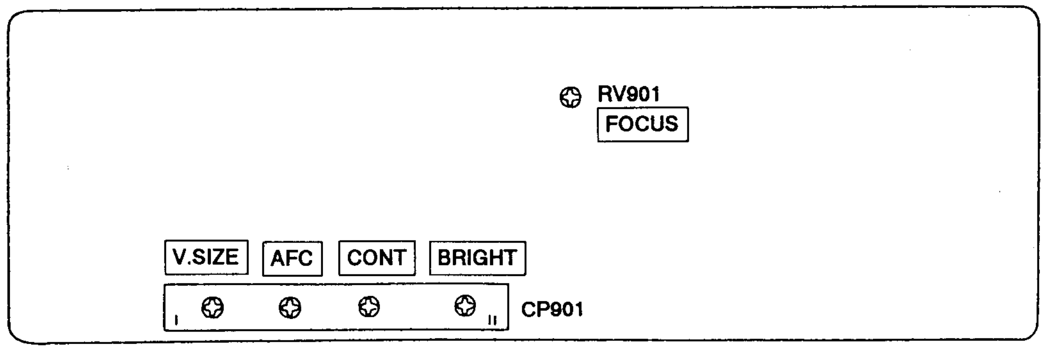
VF-14P BOARD (COMPONENT SIDE)


RV904
Brightness
RV902
Vertical amplitude
RV901
Horizontal oscillation frequency
C904

VF-14P BOARD (CONDUCTOR SIDE)



VF-22P BOARD (COMPONENT SIDE)


RV901
FOCUS
V.SIZE
AFC
CONT
BRIGHT
CP901

SECTION 8
MECHANISM BLOCK ADJUSTMENTS

Mechanism Block Adjustments

Refer to the separate "8mm Video Mechanical Adjustment Manual Ⅲ U Mechanism" for adjustment and checking of the mechanism block and for replacement of mechanical parts.
Refer to the following for setting of track shift mode.

8-1. TRACK SHIFT MODE SETTING

[Setting method]

- Connect the TEST A terminal and TEST B terminal to the COM terminal. Connect Pin ① and Pin ③ of CN508 on the VK-3P board to Pin ②. (See Fig. 8-1.)

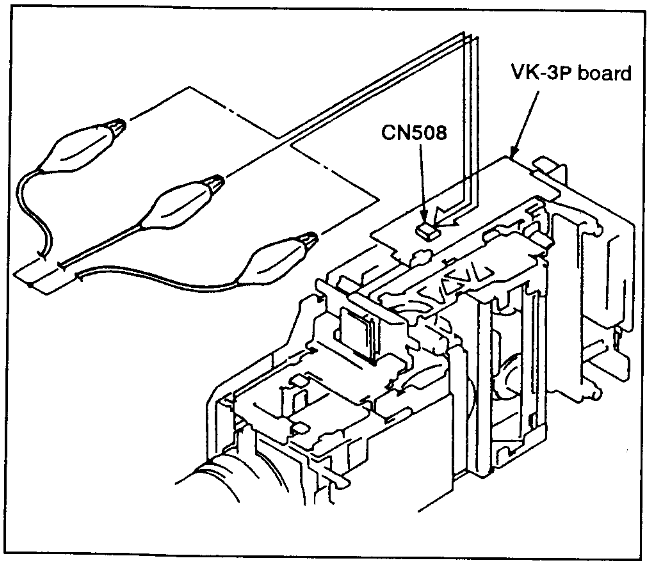

VK-3P board
CN508

Fig. 8-1.

8-2. PREPARATION FOR ADJUSTMENT

1) Perform cleaning of the tape running surface (tape guides, drums, capstan shafts, and pinch rollers).
2) Connection of oscilloscope
   CH 1: RF signal output (V RF OUT) of drum head
   Pin ③ (V RF OUT) of CN102 on the CO-2P board
   External trigger: External trigger output (RF SW.P)
   Pin ④ of CN102 on the CO-2P board.
3) Play back the alignment tape (WR5-1C, Ref No. J-5) for tracking.
4) Confirm that the RF waveform on oscilloscope at both entrance and exit sides is flat. (See Fig. 8-3.)
   Perform the adjustment described below if not flat.

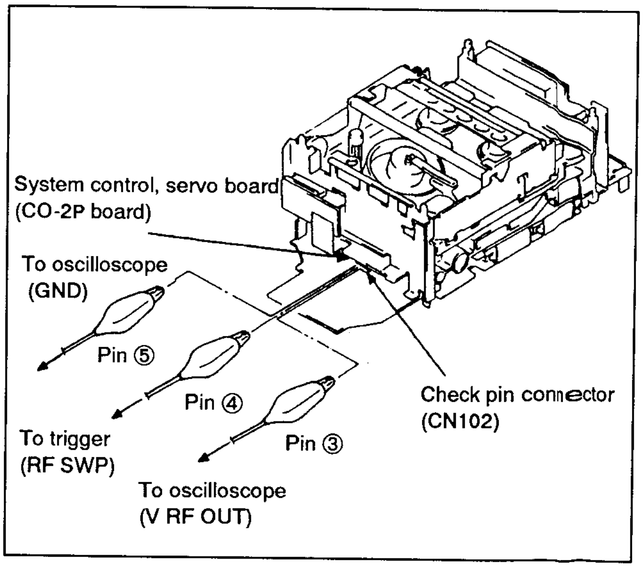

System control, servo board
(CO-2P board)
To oscilloscope
(GND)
Pin ⑤
Pin ④
Pin ③
To trigger
(RF SWP)
To oscilloscope
(V RF OUT)
Check pin connector
(CN102)

Fig. 8-2.

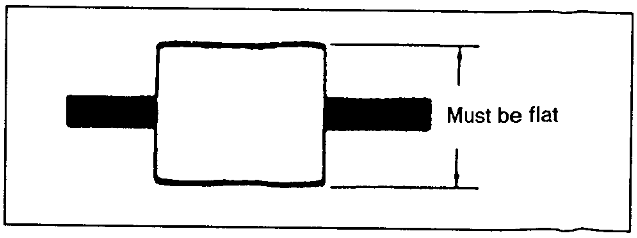

Must be flat

Fig. 8-3.

SECTION 9

VIDEO BLOCK ADJUSTMENTS

During the adjustments, see the adjustment element location to the adjustment from page 268.

Use the following measuring instruments for adjustment of the VTR block.

[Equipment to be used]

1) Monitor TV
2) Dual trace oscilloscope of over 10 MHz band, incorporates delay mode. (Use 10 : 1 probe unless otherwise specified)
3) Frequency counter
4) Pattern generator with video output terminal
5) Digital voltmeter
6) Audio generator
7) Audio level meter
8) Audio distortion meter
9) Audio attenuator
10) Regulated power supply
11) Alignment tapes
    Tracking adjustment (WR5-1CP)*[1]
        Parts Code: 8-967-995-07
    Video frequency characteristics adjustment (WR5-6C)*[2]
        Parts Code: 8-967-995-17
    Operation check (WR5-4CL)*[3]
        Parts Code: 8-967-995-56
        (WR5-5CSP)*[4]
        Parts Code: 8-967-995-47
    Note:
    *1 WR5-1C (8-967-995-06) is also available.
    *2 WR5-2C (8-967-995-16) is also available.
    *3 WR5-3CL (8-967-995-36) is also available.
    *4 WR5-3CSP (8-967-995-27) and
    WR5-4CSP (8-967-995-46) are also available.
12) Adjustment remote controller (J-6082-053-A)

[Connection of equipment]

Unless otherwise specified, adjustment is made with the measuring instrument connected as shown in the diagram below.

- Camera/video power switch......Video position

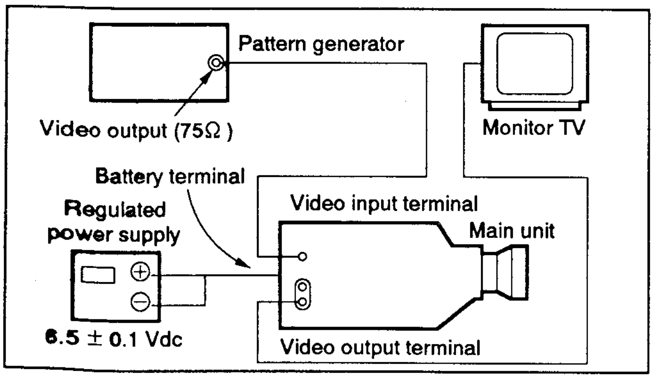

Pattern generator
Video output (75Ω)
Monitor TV
Battery terminal
Regulated power supply
Video input terminal
Main unit
6.5 ± 0.1 Vdc
Video output terminal

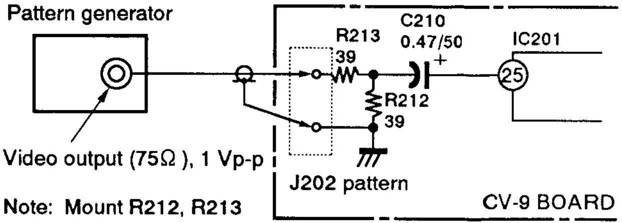
Fig. 9-1.

Note: When adjusting with the CV-9 board open, remove the follwing connectors:

1. CN601, CN602, CN801
2. CN802
3. CN901
4. CN902

There is not the external input terminal (VIDEO IN) in AEP, UK models. Accordingly, perform the following operation.

- Signal input


Pattern generator
R213
39
C210
0.47/50
IC201
25
R212
39
Video output (75Ω), 1 Vp-p
J202 pattern
CV-9 BOARD

Note: Mount R212, R213 and C210.

- REC mode
  1. Connect Pins ① and ⑦ of the VK-3P board with a diode (1SS119, etc.) until the unit enters the REC mode.

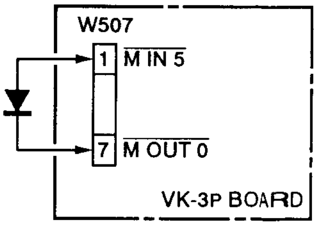

W507
1
M IN 5
7
M OUT 0
VK-3P BOARD

Fig. 9-2.

[Set-up during adjustment]

Since the video output signal obtained from the pattern generator is used as the adjusting signal for the VTR block, it is necessary that this video output signal be within the required specifications. Connect an oscilloscope to J202 (video input terminal) on the CV-9 board and make sure that the amplitude of the video SYNC signal is approximately 0.3V, that the video block amplitude is approximately 0.7V, that the burst signal amplitude is approximately 0.3V with flat characteristics, and the signal level ratio between the burst signal and "Red" signal is 0.30 : 0.66. The video signal (color bars) used for VTR block electrical adjustment are shown in Fig. 9-3.

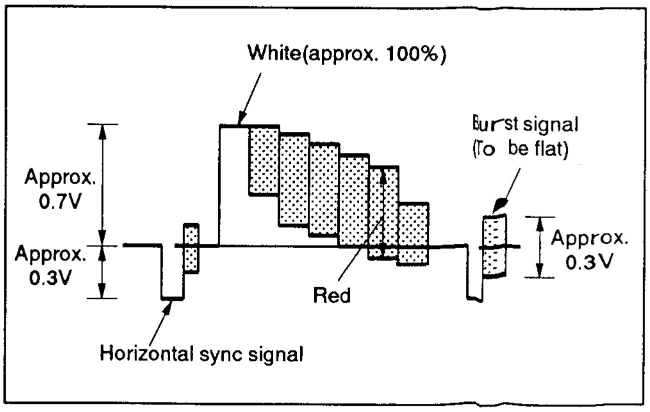
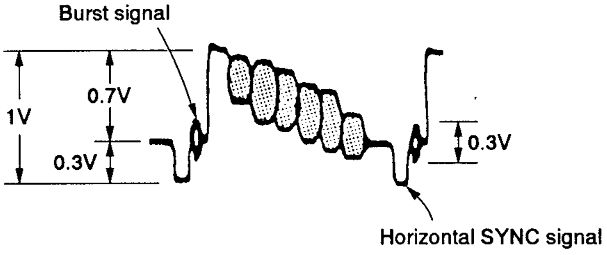
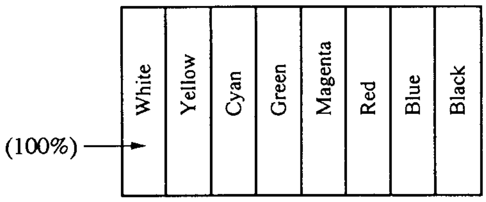

White(approx. 100%)
Burst signal
(To be flat)
Approx. 0.7V
Approx. 0.3V
Approx. 0.3V
Red
Horizontal sync signal

Fig. 9-3. Color bar signal of pattern generator

[Alignment tapes]

Tape	Content	Use
Tracking (WR5-1CP)	1. Recording area: PCM – video 2. Recording content: CH2:1MHz linearity adjustment signal (CH1: 9MHz)	Drum linearity adjustment
Video Frequency Response (WR5-6C)	1. Recording area: Video 2. Recording content: RF sweep 0 to 10MHz 3. Maker: 1, 3.58, 5.5 and 7MHz	Frequency response adjustment
Operation Check SP mode (WR5-5CSP) LP mode (WR5-4CL) Note: PCM area is not included in WR5-4CL	1. Recording area: Video 2. Recording content: ■ Video track •Video signals Color bars 4 minutes Monoscope 4 minutes (Color bars)  Burst signal 1V 0.7V 0.3V 0.3V Horizontal SYNC signal  White Yellow Cyan Green Magenta Red Blue Black (100%) •Audio signals(AFM) 400Hz 60% modulation ■ PCM area •Audio signals(PCM) 1kHz 4 minutes — Color bar 20Hz 2sec 400Hz 4sec 14kHz 2sec } Iterative Monoscope	Operation check

E, Australian model

[I/O level and impedance]

Video input Pin jack
Input signal: 1 Vp-p, 75Ω unbalanced, negative sync

Video output Pin jack
Output signal: 1 Vp-p, 75Ω unbalanced, negative sync

Audio input Pin jack
Input level: –7.5 dBs (0 dBs=0.775 Vrms)
Input impedance: More than 47 kΩ

Audio output Pin jack
Specified output: –7.5 dBs
Output impedance: More than 2.2 kΩ

AEP, UK model

[Output level and impedance]

Video output Pin jack
Output signal: 1 Vp-p, 75Ω unbalanced, negative sync

Audio output Pin jack
Specified output: –7.5 dBs
Output impedance: More than 2.2 kΩ

[Service modes]

This unit is equipped with service modes for adjustment and operation checking.

There are the following two service modes and switching between them is by connection between GND and Pin (B6) of the check point array on the CV-9 board.

Service Mode	Function	Connection between GND and Pin (B6) of the check point array (CV-9 board)
Status indication mode	For video block adjustment, operation checking	Open (no connection)
EVR adjustment mode	For adjustment of camera block	Shorted

Refer to Camera Block Adjustment for details on the EVR adjustment mode.

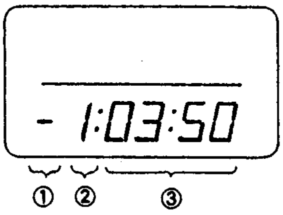
1. Invoking service mode

1) Connect the adjustment remote controller to the remote terminal (J951 on RC-29P board) of the main unit.
2) Set the HOLD switch of the adjustment remote controller to the HOLD position (SERVICE position).

The status indication mode is invoked by the above operation. (To select the EVR adjustment mode, connection between Pin (B6) of the check point array and GND is required.)

2. Indication on adjustment remote controller LCD in status indication mode

Note: In categories 1 through 4, the same information is displayed in the EVF screen and on the monitor screen (when the data screen is ON).



①...... Minus segment flashes to indicate that the service mode has been invoked.
②...... Indicates service mode category.
③...... Indicates battery voltage, LAST EMG, PRESET EMG, or MODE SW CODE according to current category.

3. Category selection and indication in each category

Select the desired category with the FF or REW button of the adjustment remote controller. There are four categories (1 through 4) and the indications are different for each. (Note that category 0 is the EVR adjustment mode.)

Caategory	Indication on LCD
1	A/D conversion value for battery voltage (decimal indication)*1 00 : 00 – 02 : 55
2	LAST EMG (last emergency)*2 Refer to Service Mode Error Indications.
3	PRESENT EMG (current emergency)*3 Refer to Service Mode Error Indications.
4	MODE SW CODE (mechanism status) 00 : 00 EJECT 00 : 01 I.A 00 : 02 UNLOAD 00 : 03 I.B 00 : 04 STOP (threading completed) 00 : 05 I.C 00 : 06 RP(REC, PB, FF, REW, CUE, REVIEW, PAUSE) 00 : AA Mode switch error

Notes:
1) Indicates a value proportional to the battery voltage.
2) LAST EMG indicates the error occurring last before entering service mode. Even if an error occurs in the service mode, it is not indicated.
3) PRESENT EMG indicates the status when the FF or REW button of the adjustment remote controller was pressed. So, the indication does not change even if the error is eliminated.

- **Service mode error indication**

Error Status	PRESENT EMG Indication LAST EMG	Indication
No error	00 : 00	00 : 00
Loading motor	00 : 01	00 : 01
REEL FG error during unthreading	00 : 02	00 : 02
REEL FG error not during unthreading	00 : 03	00 : 03
Capstan error	00 : 04	00 : 04
DRUM PG error (0) when starting drum	00 : 05	00 : 05
DRUM PG error (1) when starting drum	01 : 05	00 : 14 or 00 : 0E
DRUM PG error (2) when starting drum	02 : 05	00 : 15 or 00 : 0F
No DRUM PG (0) when starting drum	00 : 06	00 : 06
No DRUM PG (1) when starting drum	01 : 06	00 : 14 or 00 : 0E
No DRUM PG (2) when starting drum	02 : 06	00 : 15 or 00 : 0F
DRUM FG error (0) when drum stationary	00 : 07	00 : 07
DRUM FG error (1) when drum stationary	01 : 07	00 : 14 or 00 : 0E
DRUM FG error (2) when drum stationary	02 : 07	00 : 15 or 00 : 0F
No DRUM PG (0) when drum stationary	00 : 08	00 : 08
No DRUM PG (1) when drum stationary	01 : 08	00 : 14 or 00 : 0E
No DRUM PG (2) when drum stationary	02 : 08	00 : 15 or 00 : 0F
Phase error (0) when drum stationary	00 : 09	00 : 09

(1) During tape threading
(2) During tape unthreading
(0) Other

4. Releasing service mode

The service mode is released by returning the HOLD switch of the adjustment remote controller to the NORMAL position or by disconnecting the adjustment remote controller from the remote terminal.

[Test modes]

This unit has three test modes which are invoked by connecting the terminals of CN508 on the VK-3P board.

Test Mode	Connection of CN508 on VK-3P Board	Function
1	Pin ③ (TEST A) and Pin ② (GND) short-circuited	1. Switching position adjustment possible. 2. Error detection disabled.
2	Pin ① (TEST B) and Pin ② (GND) short-circuited	1. For battery end detection adjustment BATTERY SENSE voltage (input voltage to Pin ㊽ of IC501) is displayed in EVF and monitor screen (only when data screen is ON). – 1 : 03 : 05 Mode indication BATTERY SENSE voltage
3	Pin ③ (TEST A) and Pin ② (GND)/Pin ① (TEST B) and Pin ② short-circuited.	1. For tape path adjustment (Tracking shifted by 1/4 track) Refer to MECHANISM ADJUSTMENTS.

9-1. POWER SUPPLY ADJUSTMENTS AND CHECKS

9-1-1. Oscillation Frequency Adjustment (PS-225P Board)

Mode	Stop (POWER ON)
Measurement Point	Collector of Q941
Measuring Instrument	Frequency counter
Adjustment Element	RV938
Specified Value	475 ± 5 kHz

Adjustment method:

1) Adjust the oscillation frequency to 475 ± 5 kHz with RV938.

9-1-2. Video 5V Adjustment (PS-225P Board)

Mode	Stop (POWER ON)
Measurement Point	Pin ① of W901
Measuring Instrument	Digital voltmeter
Adjustment Element	RV936
Specified Value	5.0 ± 0.05 Vdc

Adjustment method:

1) Adjust with RV936 so that it becomes 5.0 ± 0.05 Vdc.

9-2. SYSTEM CONTROL ADJUSTMENTS

9-2-1. Battery Down Adjustment (CO-2P Board)

Mode	Camera recording
Signal	Arbitrary
Measurement Point	Confirmation on monitor screen
Measuring Instrument	
Adjustment Element	RV551
Specified Value	Battery indication (🔋) flashes at a rate of 3.8 times per second (3.8 Hz) and counter value is approximately "–1 : 02 : 85".

Connections:

1) Connect a regulated power supply and digital voltmeter as shown in Fig. 9-4.
2) Connect Pin ① (TEST B) and Pin ② (GND) of CN508 on the VK-3P board with a jumper wire. (Test 2 mode)

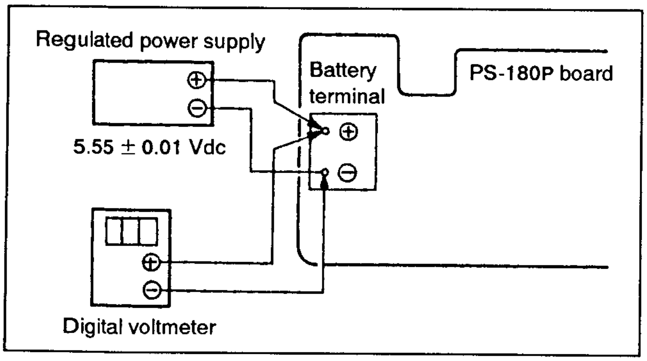


Fig. 9-4.

Adjustment method:

1) Press the data screen button (S509) on the VK-3P board to display the counter on the monitor screen. (See Fig. 9-5.)
2) Confirm that the indication on the digital voltmeter is 5.55 ± 0.01 Vdc.
3) Slowly rotate RV551 and set to the closest point at which the battery indication (🔋) on the monitor screen flashes at a rate of 3.2 times per seconds (3.2 Hz) and the counter value is "–1 : 02 : 85".

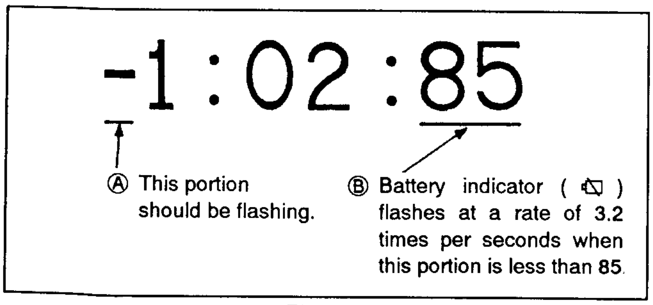

-1 : 02 : 85
Ⓐ This portion should be flashing.
Ⓑ Battery indicator (🔋) flashes at a rate of 3.2 times per seconds when this portion is less than 85.

Fig. 9-5.

Checking method:

Perform the following checks and repeat the adjustments again if the required conditions are not satisfied.

1) Adjust the output voltage of the regulated power supply so that the indication of the digital voltmeter becomes 6.30 ± 0.01 Vdc.
2) Set the unit to the camera REC mode after turning the power off and then on.
3) Press the data screen button on the VK-3P board so that there is data indication on the monitor screen.
4) Slowly lower the output voltage of the regulated power supply until the indication on the digital voltmeter becomes 5.60 ± 0.01 Vdc.
5) Confirm that the battery indicator (🔋) on the monitor screen is out or flashing at a rate of 0.8 times per second.
6) Slowly lower the output voltage of the regulated power supply until the indication on the digital voltmeter becomes 5.50 ± 0.01 Vdc.
7) Confirm that the battery indicator (🔋) is flashing on the monitor screen at a rate of 3.2 times per second (3.2 Hz).

9-2-2. System Clock Adjustment (CK-19P Board)

Mode	Power ON
Measurement Point	Pin ⑱ of IC651
Measuring Instrument	Frequency counter
Adjustment Element	RV651
Specified Value	330 ± 5 kHz

Adjustment method:

1) Adjust with RV651 so that it becomes 330 ±5 kHz.

9-2-3. Clock Precision Adjustment (CK-19P Board)

Mode	Power OFF
Measurement Point	Pin ㊶ of IC651
Measuring Instrument	Frequency Counter
Adjustment Element	CV651
Specified Value	8192.00 ± 0.04 Hz

Adjustment method:

1) Disconnect the main power supply and lithium battery.
2) Connect Pin ㉘ (TEST) of IC651 to ground using a jumper wire (TEST mode).
3) Supply 3V (3.0 ± 0.05 Vdc) of power to the lithium battery terminals from a regulated power supply.
4) Adjust to 8192.00 ± 0.04 Hz using CV651.
5) Disconnect the regulated power supply and the jumper wire.

9-3. SERVO SYSTEM ADJUSTMENTS

9-3-1. Oscillation Frequency Adjustment (CO-2P Board)

Mode	Recording (SP mode)
Signal	Color bar
Measurement Point	Pin ⑩ of IC621
Measuring Instrument	Frequency counter
Adjustment Element	RV621
Specified Value	480 ± 5 kHz

Adjustment method:

1) Set the oscillation frequency to 480 ± 5 kHz using RV621.

9-3-2. REC ATF Level Checking (CO-2P Board)

Mode	Recording
Signal	No signal
Measurement Point	Emitter of Q530
Measuring Instrument	Oscilloscope
Specified Value	Approx. 900 mVp-p

Checking method:

1) Confirm that the REC ATF signal level is approximately 900 mVp-p.

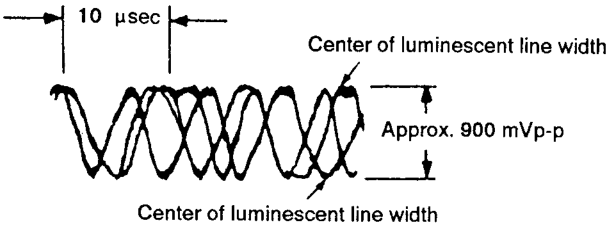

10 μsec
Center of luminescent line width
Approx. 900 mVp-p
Center of luminescent line width

Fig. 9-6. REC ATF level checking

9-3-3. Switching Position Adjustment (CO-2P Board)

Mode	Playback
Signal	Alignment tape: For operation checking (WR5-5CSP)
Measurement Point	CH-1: J201 (video output) on CV-9 board CH-2: Pin ④ (RF SWP) of CN102
Measuring Instrument	Oscilloscope
Adjustment Element	RV501
Specified Value	6.5 ± 0.3H (410 ± 20 μs)

Connections:

1) Connect Pin ③ (TEST A) and Pin ② (GND) of CN508 on the VK-3P board using a jumper wire. (Test 1 mode)

Adjustment method:

1) Adjust with RV501 so that it becomes 6.5 ± 0.3H (410 ± 20 μs).

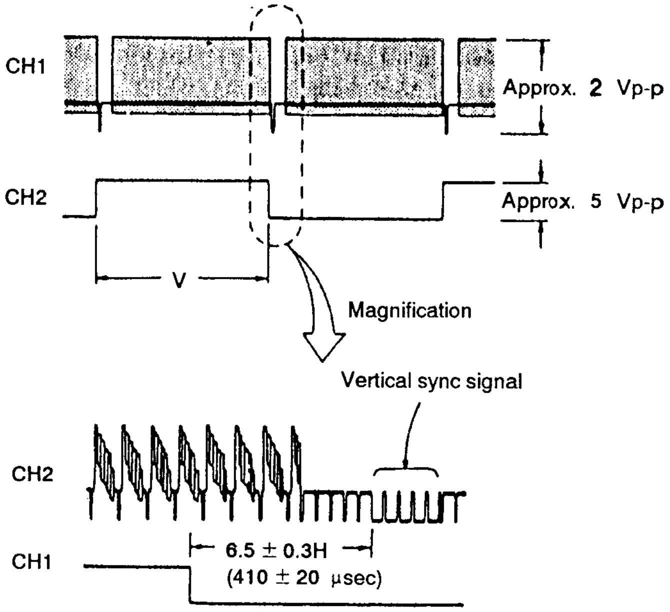

CH1
Approx. 2 Vp-p
CH2
Approx. 5 Vp-p
V
Magnification
Vertical sync signal
CH2
CH1
6.5 ± 0.3H
(410 ± 20 μsec)

Fig. 9-7. Switching position adjustment

9-3-4. Still Adjustment (CV-9 Board)

Mode	Playback pause (LP)
Signal	Self-recorded tape of color bars signal
Measurement Point	Monitor TV screen
Measuring Instrument	
Adjustment Element	RV552
Specified Value	Equal top and bottom noise bands

Note: Use the midsection of a tape (1/4 to 3/4) for adjustment.

Adjustment method:

1) Play back the self-recorded tape and press the PAUSE button to set the playback pause mode after the image has stabilized.
2) Confirm that the noise bands on top and bottom of the screen are eual.
3) If the specified condition is not satisfied, adjust RV552, and repeat 1) and 2).

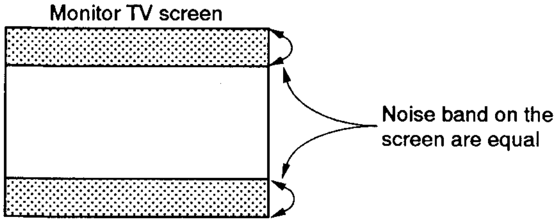


Fig. 9-8. Still adjustment

9-3-5. Capstan FG Adjustment (CO-2P Board) (E, Australian Model only)

Mode	Recording (LP mode)
Signal	Arbitrary
Measurement Point	Pin ① of IC510
Measuring Instrument	Oscilloscope
Adjustment Element	RV502
Specified Value	Minimum amplitude

Adjusting method:

1) Adjust amplitude of the output waveform (capstan error) at Pin ① of IC510 to the minimum with RV502.

Minimize amplitude.

Fig. 9-9.

9-4. VIDEO BLOCK ADJUSTMENT

The adjustment of the video system should in principle follow the adjustment procedure outlined below.
The color video signal supplied from the pattern generator is utilized as the video input signal for video system adjustment in the recording mode. Make sure that the sync signal and color burst signal match the specifications given in set-up for adjustment, as shown in Fig. 9-3.

[Adjustment procedure]

1) Playback frequency characteristics adjustment
2) Flying erase check
3) Crystal oscillator fo adjustment
4) Y/C separation adjustment
5) IR2 adjustment
6) SYNC AGC adjustment
7) Emphasis input level adjustment
8) PB Y level adjustment
9) PB video out level adjustment
10) Y FM carrier frequency adjustment
11) Y FM deviation adjustment
12) Chroma emphasis fo adjustment
13) REC Y level adjustment
14) REC C level adjustment
15) Feedback chroma adjustmrnt
16) Quasi burst phase adjustment
17) Delay burst phase adjustment
18) DDS character position adjustment
19) Character generator fo adjustment

9-4-1. Playback Frequency Characteristics Adjustment (CO-2P Board)

1. CH1, CH2 adjustment

The adjusting element for CH2 is shown in parentheses [ ].

Mode	Playback
Signal	Alignment tape: For frequency characteristics adjustment (WR5-6C)
Measurement Point	Pin ③ of CN102 External trigger: Pin ④ of CN102 Trigger slope: +, [–]
Measuring Instrument	Oscilloscope
Adjustment Element	RV101 [RV102]
Specified Value	3.58 MHz level : 5.5 MHz level=4 : 3

Adjustment method:

1) Adjust RV101 [RV102] so that the ratio of the 3.58 MHz level to the 5.5 MHz level is 4 : 3 [4 : 3].

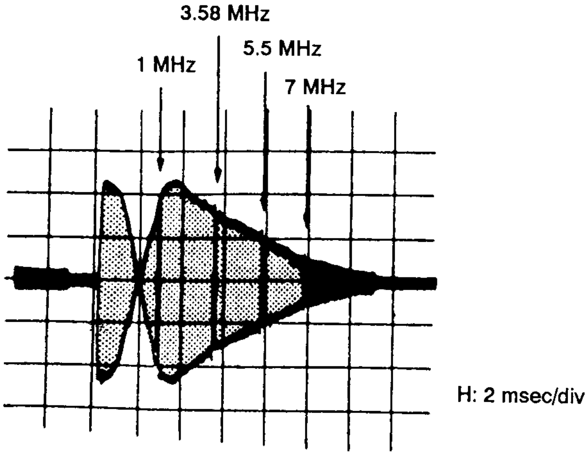


Fig. 9-10. Playback frequency characteristics adjustment

9-4-2. Flying Erase Check (CO-2P Board)

Mode	Recording
Signal	Arbitrary
Measurement Point	Pin ⑫ of CN101 (TP103: FE (X))
Measuring Instrument	Oscilloscope and frequency counter
Specified Value	Frequency: 7.95 ± 5.5 MHz Voltage: 7.75 ± 0.75 Vp-p

Note: Be sure to use MP type tape. (Pin ⑪ of CN501 should be "L".)

Checking method:

1) Confirm that the oscillation frequency is 7.95 ± 5.5 MHz and the oscillation voltage is 7.75 ± 0.75 Vp-p.

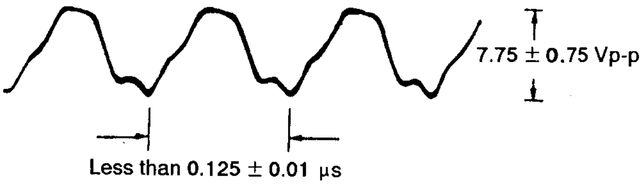


Fig. 9-11.

9-4-3. Crystal Oscillator fo Checking (CV-9 Board)

Mode	Playback
Signal	Alignment tape: For operation checking (WR5-5CSP)
Measurement Point	Pin ⑩ of W202 (fsc IN)
Measuring Instrument	Frequency counter
Specified Value	4433619^{+50}_{-60} Hz

Checking method:

1) Confirm that the oscillation frequency at Pin ⑩ of W202 is 4433619^{+50}_{-60} Hz.

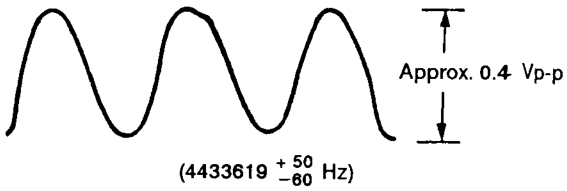


Fig. 9-12. Crystal oscillator fo adjustment

9-4-4. Y/C Separation Adjustment (CV-9 Board)

Mode	Recording
Signal	Color bars
Measurement Point	Any terminal of RV204 (DEV) (Pin ㉕ of IC203)
Measuring Instrument	Oscilloscope
Adjustment Element	RV202
Specified Value	Minimum residual chroma component

Connections:

1) Connect Pin ㊴ of IC203 (Pin ⑭ of IC202) to GND with a 10 μF/16V electrolytic capacitor. (Capacitor negative side to GND)

Adjustment method:

1) Set the residual chroma component to minimum with RV202.

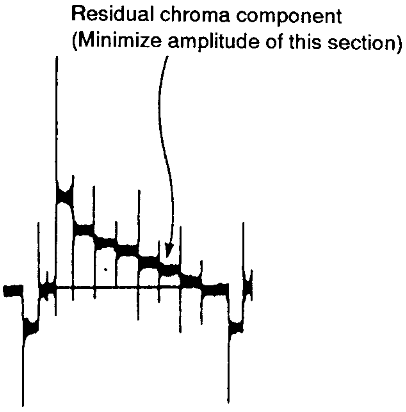

Residual chroma component
(Minimize amplitude of this section)

Fig. 9-13. Y/C separation adjustment

9-4-5. IR2 Adjustment (CV-9 Board)

Mode	Recording
Signal	Color bars
Measurement Point	Pin ⑧ of IC203 or base of Q252 (BF OUT)
Measuring Instrument	Oscilloscope
Adjustment Element	RV203
Specified Value	6.9 ± 0.2 μsec

Adjustment method:

1) Adjust RV203 so that it becomes 6.9 ± 0.2 μsec.

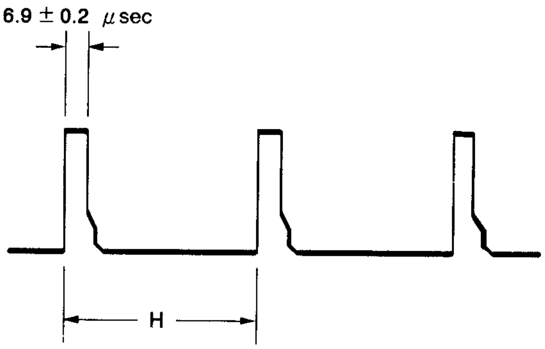


Fig. 9-14. IR2 adjustment

9-4-6. SYNC AGC Adjustment (CV-9 Board)

Mode	Recording
Signal	Color bar
Measurement Point	J201 (VIDEO OUT)
Measuring Instrument	Oscilloscope
Adjustment Element	RV201
Specified Value	1.00 ± 0.05 Vp-p

Note: Terminate VIDEO OUT (J201) at 75Ω .

Adjustment method:

1) Adjust with RV201 so that it becomes 1.00 ± 0.05 Vp-p.

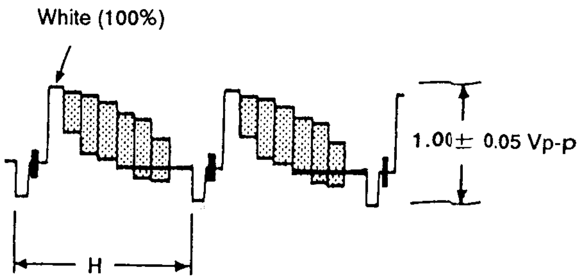


Fig. 9-15. SYNC AGC adjustment

9-4-7. Emphasis Input Level Adjustment (CV-9 Board)

Mode	Recording
Signal	Color bar
Measurement Point	Pin (54) of IC203
Measuring Instrument	Oscilloscope
Adjustment Element	RV401
Specified Value	0.50 ± 0.02 Vp-p

Adjustment method:

1) Adjust with RV401 so that it becomes 0.50 ± 0.02 Vp-p.

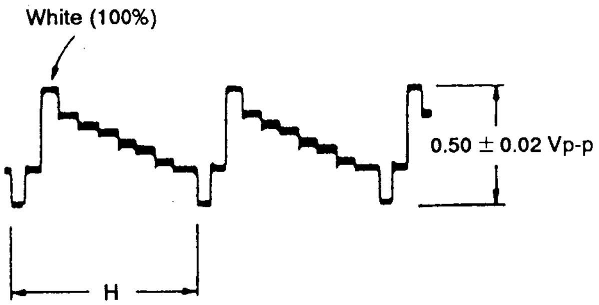


Fig. 9-16. Emphasis input level adjustment

9-4-8. PB Y Level Adjustment (CV-9 Board)

Mode	Playback
Signal	Alignment tape: For operation checking (WR5-5CSP) Color bar section
Measurement Point	Pin ㊼ of IC203
Measuring Instrument	Oscilloscope
Adjustment Element	RV402
Specified Value	0.50 ± 0.02 Vp-p

Adjusting method:

1) Adjust to 0.50 ± 0.02 Vp-p with RV402.
2) Always perform "PB video out level adjustment" after this adjustment.

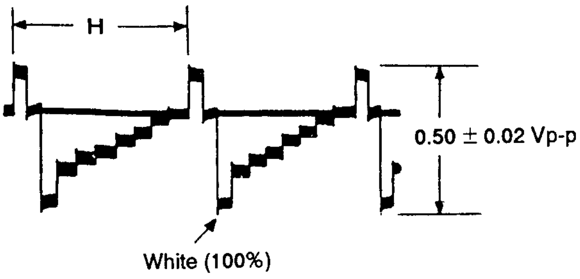


Fig. 8-17. PB Y level adjustment

9-4-9. PB Video Out Level Adjustment (CV-9 Board)

Mode	Playback
Signal	Alignment tape: For operation checking (WR5-5CSP) Color bar section
Measurement Point	J201 (VIDEO OUT)
Measuring Instrument	Oscilloscope
Adjustment Element	RV403
Specified Value	1.00 ± 0.04 Vp-p

Note: Terminate VIDEO OUT (J201) at 75Ω .

Adjustment method:

1) Adjust with RV403 so that it becomes 1.00 ± 0.04 Vp-p.

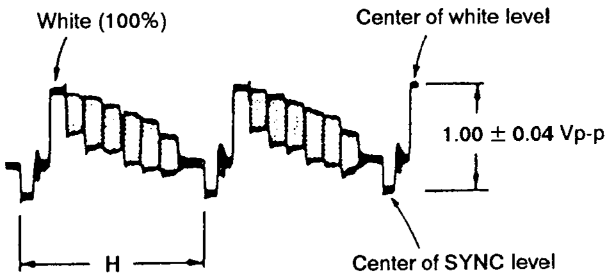


Fig. 9-18. PB video out level adjustment

9-4-10. Y FM Carrier Frequency Adjustment (CV-9 Board)

Mode	Recording
Signal	No signal
Measurement Point	Emitter of Q232 or center terminal of RV207 (REC Y)
Measuring Instrument	Frequency counter
Adjustment Element	RV205
Specified Value	4.39 ± 0.02 MHz

Adjustment method:

1) Adjust to 4.39 ± 0.02 MHz with RV205.
2) Perform "Deviation Adjustment".

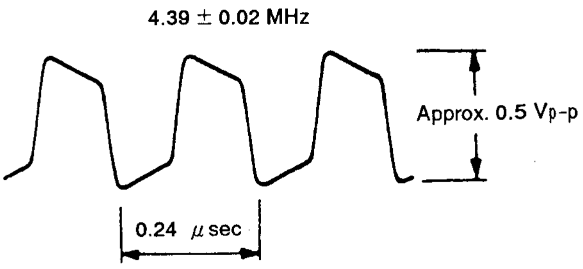


Fig. 9-19. Y FM carrier frequency adjustment

9-4-11. Y FM Deviation Adjustment (CV-9 Board)

Mode	Recording and playback
Signal	Color bar
Measurement Point	J201 (VIDEO OUT)
Measuring Instrument	Oscilloscope
Adjustment Element	RV204
Specified Value	Playback level is 1.00 ± 0.04 Vp-p

Notes: 1) Confirm that "PB Y Level Adjustment", "PB Video Out Level Adjustment" and "Y FM Carrier Frequency Adjustment" have been completed.
2) Terminate VIDEO OUT (J201) at 75Ω .

Adjustment method:
1) Record the color bar signal.
2) Playback the recorded signal.
3) Confirm the playback output.
Specified value: 1.00 ± 0.04 Vp-p
4) If the specified value is not satisfied, repeat 1) to 3) after turning RV204 in the following manner.

	Rotation direction of RV204
When smaller than specified value	Clockwise (↻)
When larger than specified value	Counterclockwise (↺)

Table 9-1.

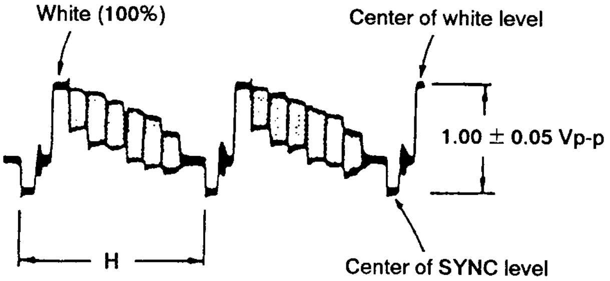

White (100%)
Center of white level
1.00 ± 0.05 Vp-p
H
Center of SYNC level

Fig. 9-20. Y FM deviation adjustment

9-4-12. Chroma Emphasis fo Adjustment (CV-9 Board)

Mode	Recording
Signal	Color bar
Measurement Point	Center terminal of RV208 (REC C)
Measuring Instrument	Oscilloscope
Adjustment Element	FL202
Specified Value	Minimum fo component

Adjustment method:
1) Adjust with FL202 so that amplitude of the flat section of the chroma signal RED section becomes minimum.

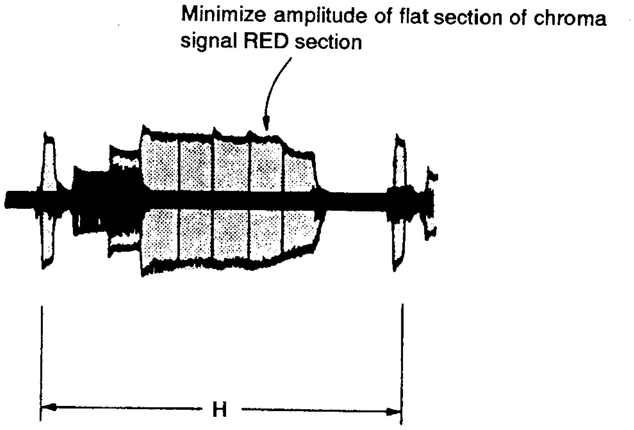

Minimize amplitude of flat section of chroma signal RED section
H

Fig. 9-21. Chroma emphasis fo adjustment

9-4-13. REC Y Level Adjustment (CV-9 Board)

Mode	Recording
Signal	No signal
Measurement Point	Emitter of Q230 (Pin ⑯ of CN502)
Measuring Instrument	Oscilloscope
Adjustment Element	RV207
Specified Value	230 ± 10 mVp-p

Adjustment method:
1) Adjust with RV207 so that it becomes 230 ± 10 mVp-p.

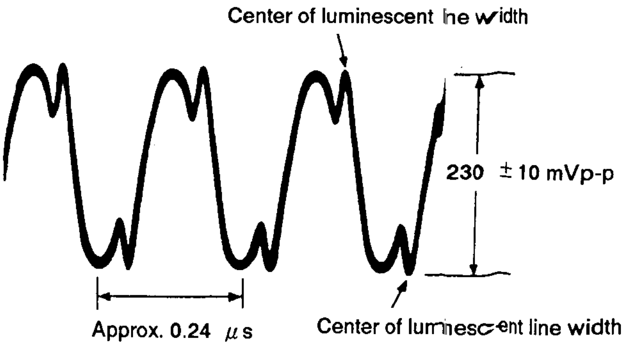

Center of luminescent line width
230 ± 10 mVp-p
Approx. 0.24 μs
Center of luminescent line width

Fig. 9-22. REC Y level Adjustment

9-4-14. REC C Level Adjustment (CV-9 Board)

Mode	Recording
Signal	Color bar
Measurement Point	Emitter of Q233 (Pin ⑱ of CN502)
Measuring Instrument	Oscilloscope
Adjustment Element	RV208
Specified Value	110 ± 10 mVp-p

Adjustment method:

1) Adjust with RV208 so that it becomes 110 ± 5 mVp-p.

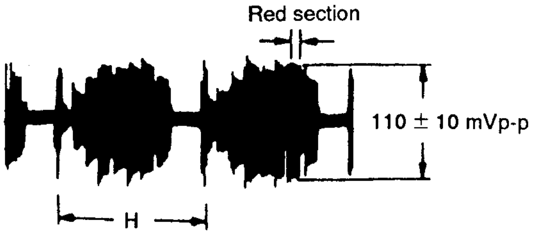


Fig. 9-23. REC C level adjustment

9-4-15. Feedback Chroma Adjustment (PJ-20 Board)

Mode	Playback
Signal	Alignment tape: For operation checking (WR5-5CSP)
Measurement Point	Emitter of Q107
Measuring Instrument	Oscilloscope
Adjustment Element	RV104
Specified Value	Mininum residual component

Adjusting method:

1) Adjust RV104 so as to mininize the residual chroma component.

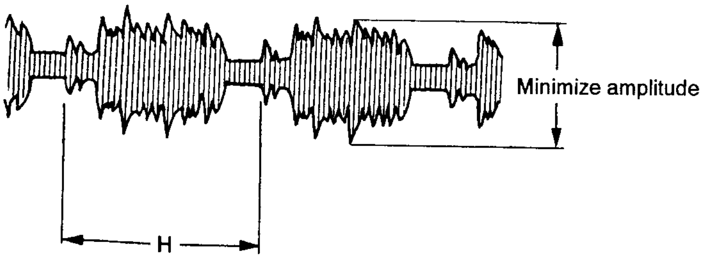


Fig. 9-24.

9-4-16. Quasi Burst Phase Adjustment (PJ-20 Board)

1. Method using vectorscope

Mode	Playback
Signal	Alignment tape: For operation checking (WR5-5CSP)
Measurement Point	VIDEO OUT terminal
Measuring Instrument	Vectorscope
Adjusting Element	RV102
Specified Value	Phase of color luminance points in quasi burst mode is same as phase of color luminance points in through burst mode

Adjusting method:

1) Memorize of the phase of the color luminance points (especially yellow). (Through burst mode)
2) Connect Pin ㉑ of IC101 and Pin ② of CN202 with a diode (1SS119, etc.). (Quasi burst mode)

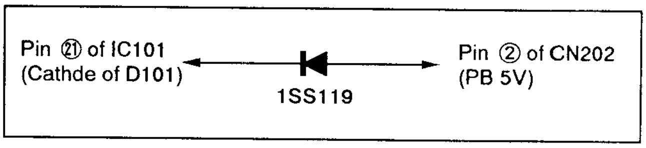


Fig. 9-25.

3) Confirm the color of color bars on the monitor screen. If abnormal, stop the unit and then set the playback mode again.
4) Adjust RV102 so that the phase of the color luminance points is the same as the phase memorized in 1).
5) Remove the diode.

2. Method using monitor TV

Mode	Playback
Signal	Alignment tape: For operation checking (WR5-5CSP)
Measurement Point	Confirmation on monitor TV screen
Measuring Instrument	
Adjusting Element	RV102
Specified Value	Minimum chroma flickering

Connection:

1) Connect Pin ㉑ of IC101 and Pin ② of CN502 on CV-9 board (RF SWP) using a diode (1SS119, etc.).

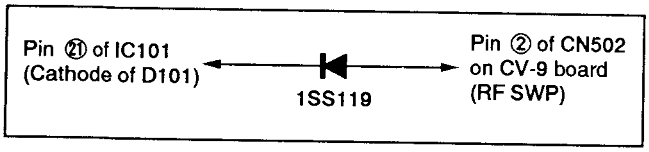


Fig. 9-26.

Adjusting method:

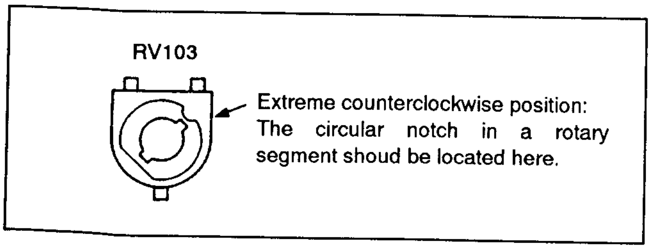
1) Observe the monitor screen. If color is abnormal and considerable chroma flicker occurs, stop the unit and then set the playback mode again.
2) Set the monitor color level to maximum and its bright level to minimum.
3) Minimize chroma flicker with RV102 so that horizontal black stripes cannot longer be seen.
4) Remove the diode.

9-4-17. Delay Burst Phase Adjustment (PJ-20 Board)

Mode	Playback pause (LP mode)
Signal	Alignment tape: For operation checking (WR5-4CL) color bars
Measurement Point	Confirmation on monitor TV screen
Measuring Instrument	
Adjusting Element	RV103
Specified Value	Minimum chroma flickering

Adjusting method:

1) Set the monitor color level to maximum and its bright level to minimum.
2) Rotate RV103 fully in the counterclockwise direction(↺).
3) Turn RV103 slowly clockwise and stop where chroma flicker is minimum and horizontal black stripes are least visible.



Extreme counterclockwise position:
The circular notch in a rotary segment shoud be located here.

Fig. 9-27.

9-4-18. DDS Character Position Adjustment (CV-9 Board)

Mode	Playback
Signal	Alignment tape: For operation checking (WR5-5CSP) Color bar section
Measurement Point	Confirm on monitor TV screen
Measuring Instrument	
Adjustment Element	CV501
Specified Value	See Fig. 9-28.

Adjustment method:

1) Press the data screen button for indication of the counter on the monitor TV screen.
2) Adjust CV501 until the right inner contour of the number at the right side of the count indication is lined up with the border line between the blue and black color bars.

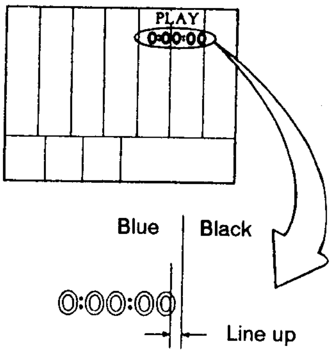


Fig. 9-28.

9-4-19. Character Generator fo Adjustment (CV-9 Board)

Mode	E-E
Signal	Non-signal
Measurement Point	Pin ⑲ of IC501
Measuring Instrument	Frequency counter
Adjustment Element	CV502
Specified Value	15625 ± 100 Hz

Adjustment method:

1) Adjust CV502 so that it becomes 15625 ± 100 Hz.

9-5. AUDIO SYSTEM ADJUSTMENT

- Perform adjustment with the color bar signal used as the video input signal.

[Connection of audio measuring instruments]

In addition to the video system measuring instruments, connect the audio system measuring instruments as shown in the figure below, and set the power switch to the video position for adjustment.

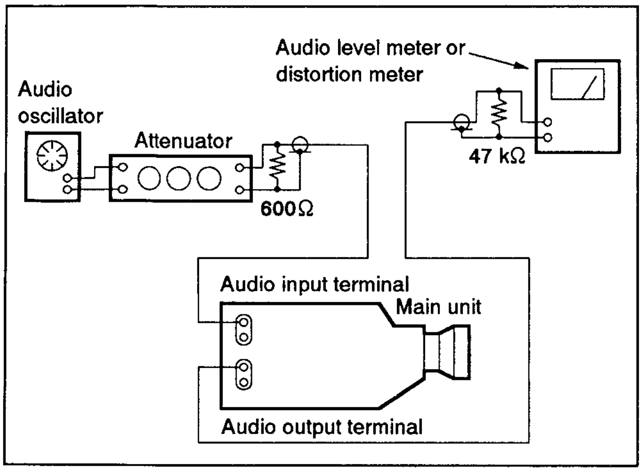
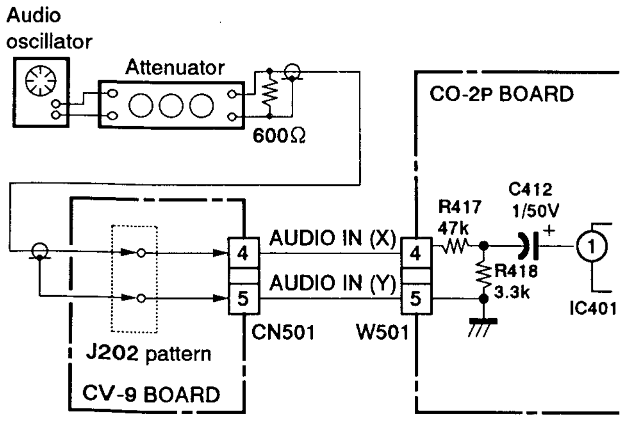

Audio level meter or distortion meter
Audio oscillator
Attenuator
47 kΩ
600Ω
Audio input terminal
Main unit
Audio output terminal

Fig. 9-29.

There is not the external input terminal (AUDIO IN) in AEP, UK models. According, perform the following operation.

- Signal input


Audio oscillator
Attenuator
600Ω
CO-2P BOARD
C412 1/50V
R417 47k
R418 3.3k
AUDIO IN (X)
AUDIO IN (Y)
4
5
4
5
1
IC401
CN501
W501
J202 pattern
CV-9 BOARD

Note: Mount R417, R418 and C412.

Fig. 9-30.

9-5-1. AFM Carrier Frequency Check (CO-2P Board)

Mode	Recording
Signal	Non-signal
Measurement Point	Pin ㉑ of IC401(REC AFM)
Measuring Instrument	Frequency counter
Specified Value	1.50 ± 0.05 MHz

Note: Connect the frequency counter through a buffer amplifier (oscilloscope, etc.) having high impedance and low capacitance.

Checking method:

1) Turn OFF the audio oscillator output.
2) Confirm that the AFM carrier frequency is 1.50 ± 0.05 MHz.

9-5-2. REC AFM Carrier Level Adjustment (CO-2P Board)

Mode	Recording
Signal	Non-signal
Measurement Point	Pin ㉑ of IC401 (REC AFM)
Measuring Instrument	Oscilloscope
Specified Value	160 ± 40 mVp-p

Checking method:

1) Confirm that the level is 160 ± 40 mVp-p.

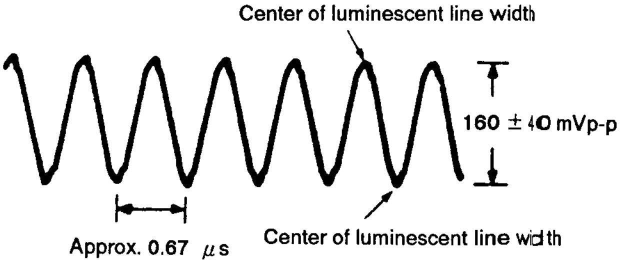

Center of luminescent line width
160 ± 40 mVp-p
Approx. 0.67 μs
Center of luminescent line width

Fig. 9-31. REC AFM recording current adjustment

9-5-3. Playback Level Check

Mode	Playback
Signal	Alignment tape: Operation checking (WR5-5CSP)
Measurement Point	Audio output terminal
Measuring Instrument	Audio level meter
Specified Value	-7.5 ± 2 dBs

Checking method:

1) Confirm that the audio output level is -7.5 ± 2 dBs.

9-5-4. E-E Output Level Check

Mode	E-E
Signal	400 Hz, –7.5 dBs
Measurement Point	Audio output terminal
Measuring Instrument	Audio level meter
Specified Value	–7.5 ± 2 dBs

Checking method:
1) Make sure that the audio output level is –7.5 ± 2 dBs.

9-5-5. Overall Level Characteristics Check

Mode	Self-recording and playback
Signal	400 Hz, –7.5 dBs
Measurement Point	Audio output terminal
Measuring Instrument	Audio level meter
Specified Value	–7.5 ± 3 dBs

Checking method:
1) Record the signal.
2) Playback the recorded section.
3) Make sure that the audio output level is –7.5 ± 3 dBs.

9-5-6. Overall Frequency Characteristics Check

Mode	Self-recording and playback
Signal	Ⓐ 400 Hz, –17.5 dBs Ⓑ 30 Hz, –17.5 dBs Ⓒ 10 Hz, –17.5 dBs
Measurement Point	Audio output terminal
Measuring Instrument	Audio level meter
Specified Value	With the 400 Hz playback output level as 0 dB, the playback output level of 30 Hz and 14 kHz is 0 ± 3 dB

Checking method:
1) Record signal Ⓐ through Ⓒ in order.
2) Playback the recorded sections.
3) With the 400 Hz playback output level as 0 dB, confirm that the playback output level of 30 Hz and 14 kHz is 0 ± 3 dB.

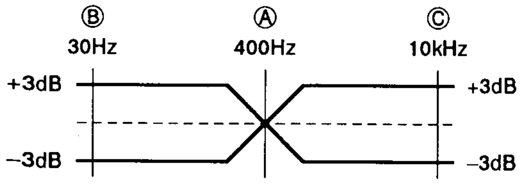


Fig. 9-32. AFM overall frequency characteristics

9-5-7. Overall Distortion Check

Mode	Self recording and playback
Signal	400 Hz, –7.5 dBs
Measurement Point	Audio output terminal
Measuring Instrument	Distortion meter
Specified Value	Less than 0.5% *1

Checking method:
1) Record the signal.
2) Playback the recorded section.
3) Confirm that the distortion is less than 0.5%. *1

*1 Value when 200 Hz – 6 kHz BPF is used

9-5-8. Overall Noise Level Check

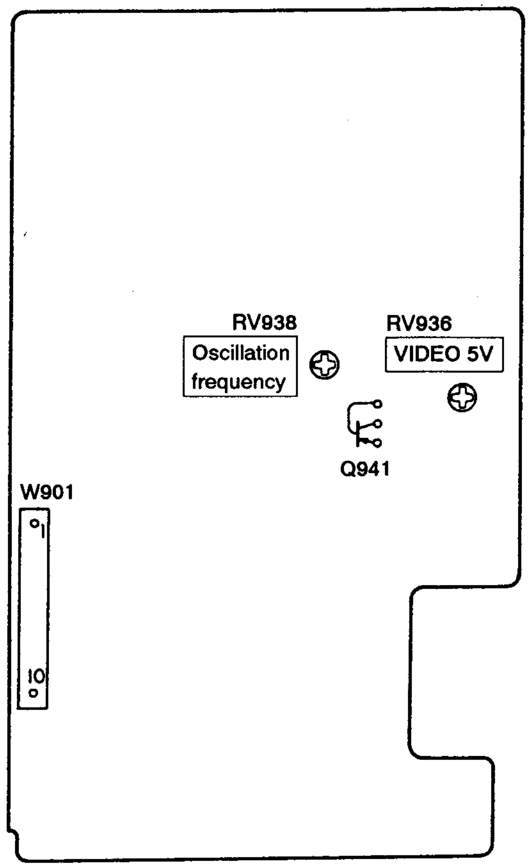
Mode	Self-recording and playback
Signal	No signal (shorting plug is inserted into audio input jack)
Measurement Point	Audio input terminal
Measuring Instrument	Audio level meter
Specified Value	Less than –67 dBs*2

Checking method:
1) Record the signal.
2) Playback the recorded section.
3) Make sure that the noise level is less than –67 dBs. *2

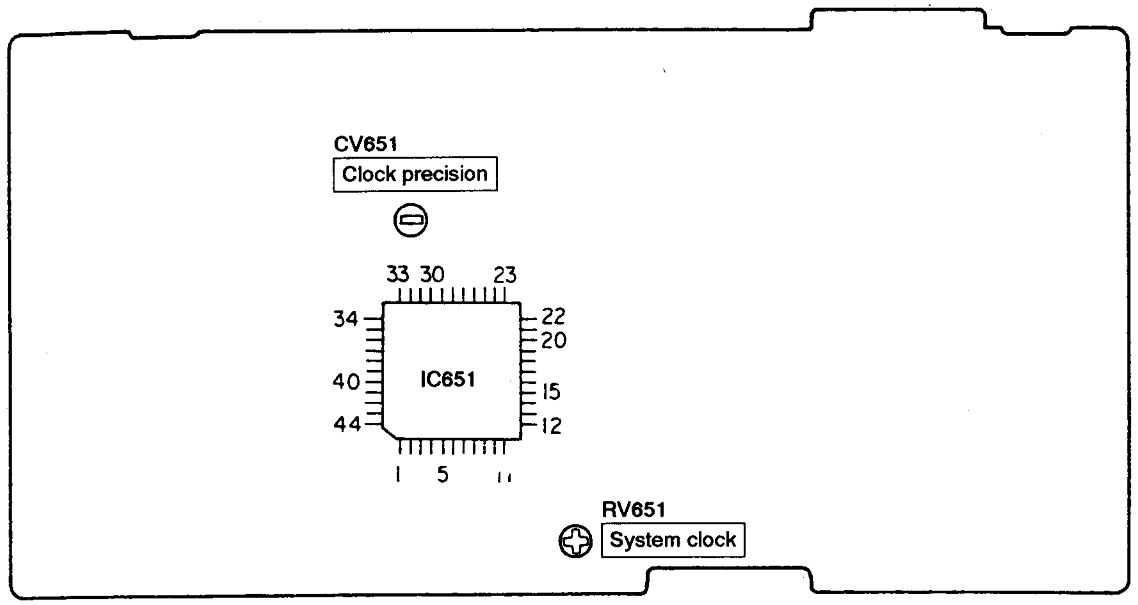
*2 Value when IHF-A hearing correction filter is used.

9-6. ADJUSTMENT ELEMENTS LOCATION

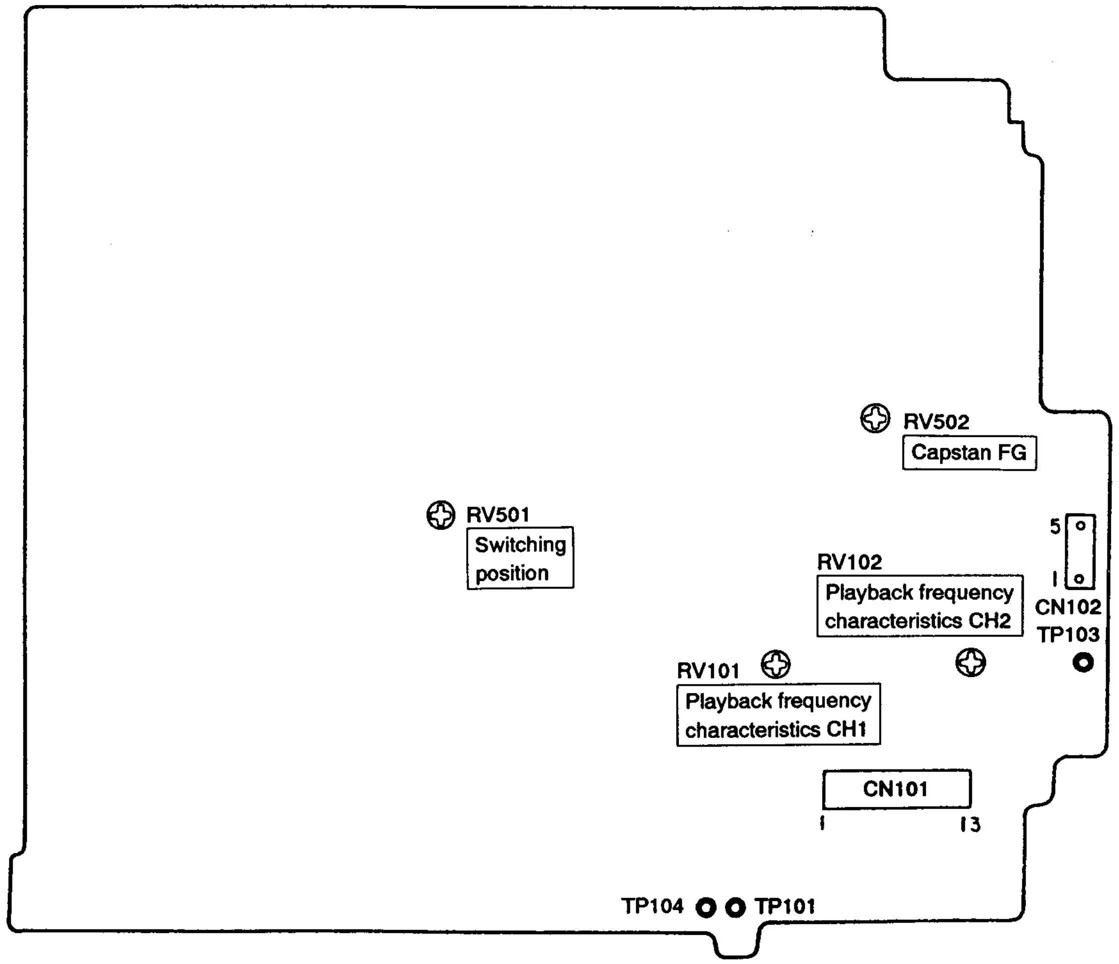
PS-225P BOARD (COMPONENT SIDE)


RV938
Oscillation frequency
RV936
VIDEO 5V
Q941
W901
1
10

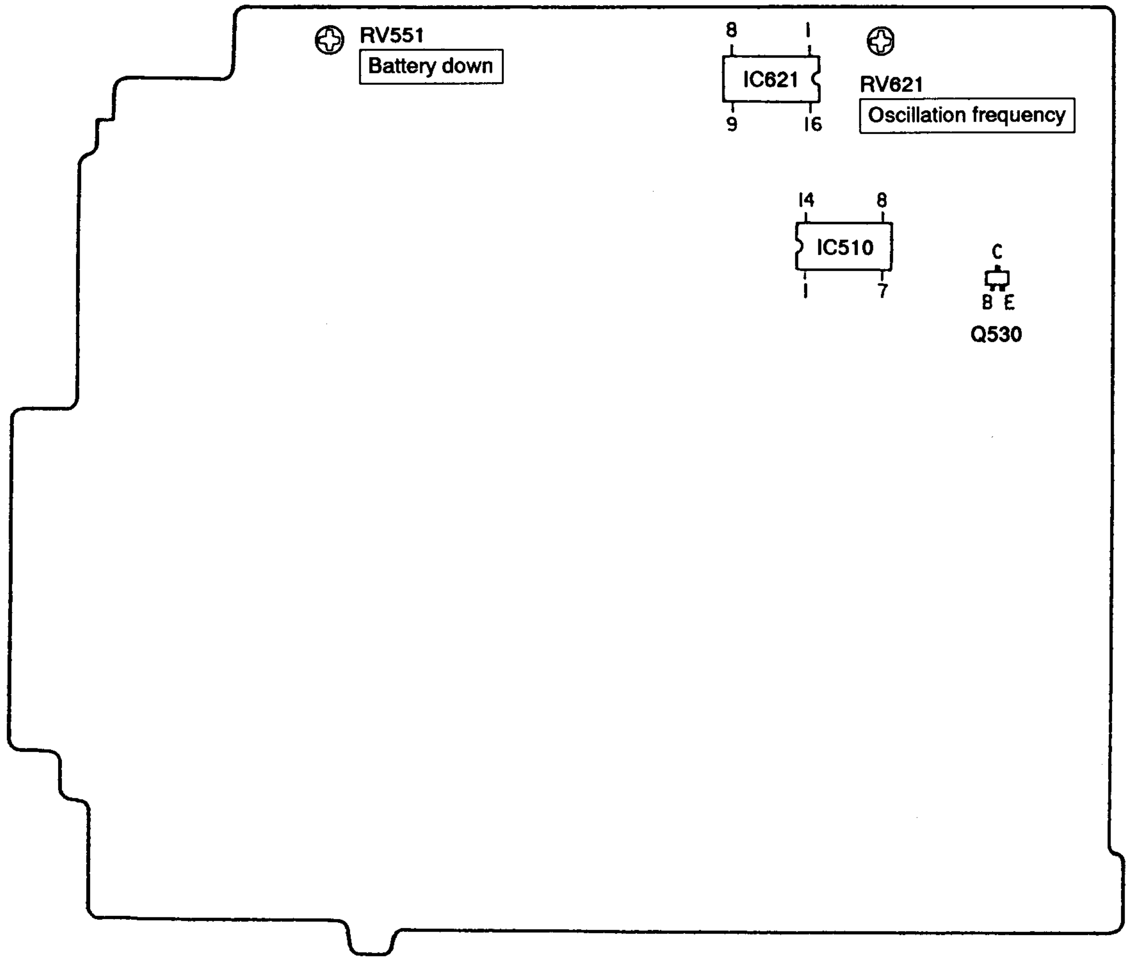
CK-19P BOARD (COMPONENT SIDE)


CV651
Clock precision
33 30 23
34
22
20
40
IC651
15
44
12
1 5 11
RV651
System clock

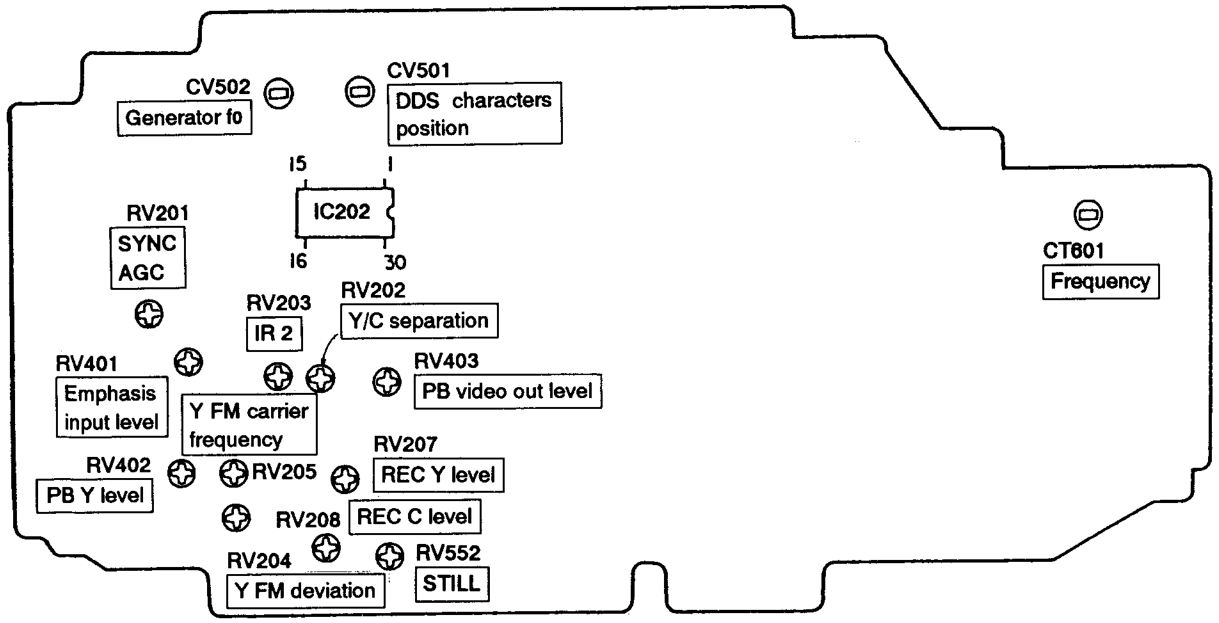
CO-2P BOARD (CONDUCTOR SIDE)


RV502
Capstan FG
RV501
Switching position
5
1
RV102
Playback frequency characteristics CH2
CN102
TP103
RV101
Playback frequency characteristics CH1
CN101
1
13
TP104
TP101

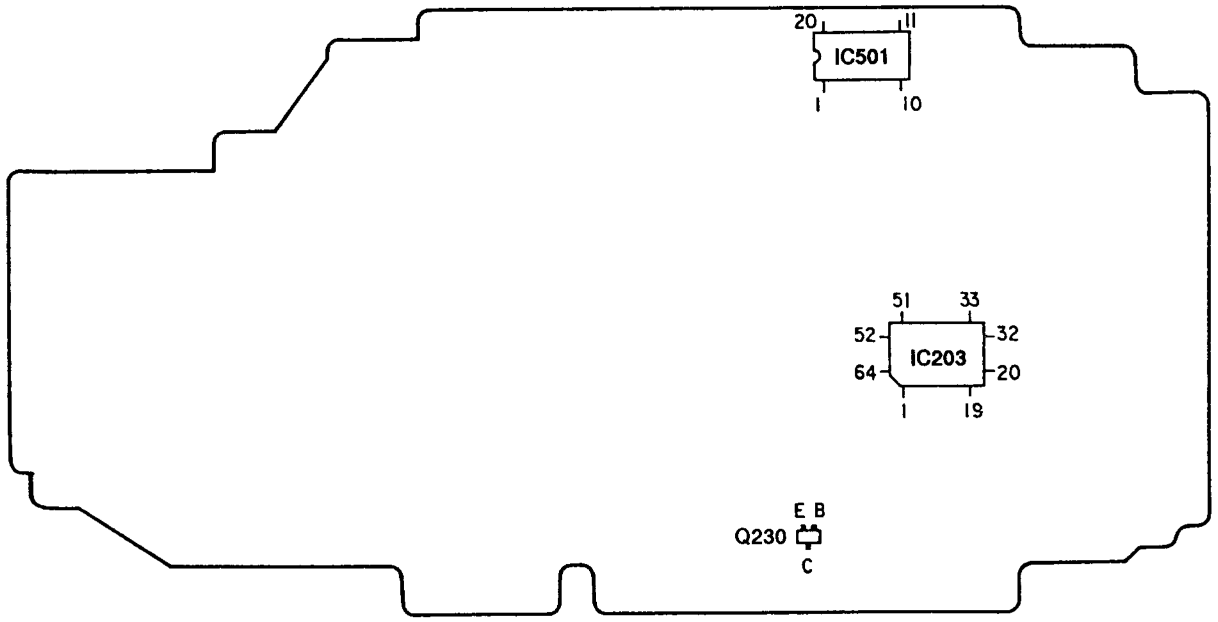
CO-2P BOARD (COMPONENT SIDE)


RV551
Battery down
8 1
IC621
9 16
RV621
Oscillation frequency
14 8
IC510
1 7
C
B E
Q530

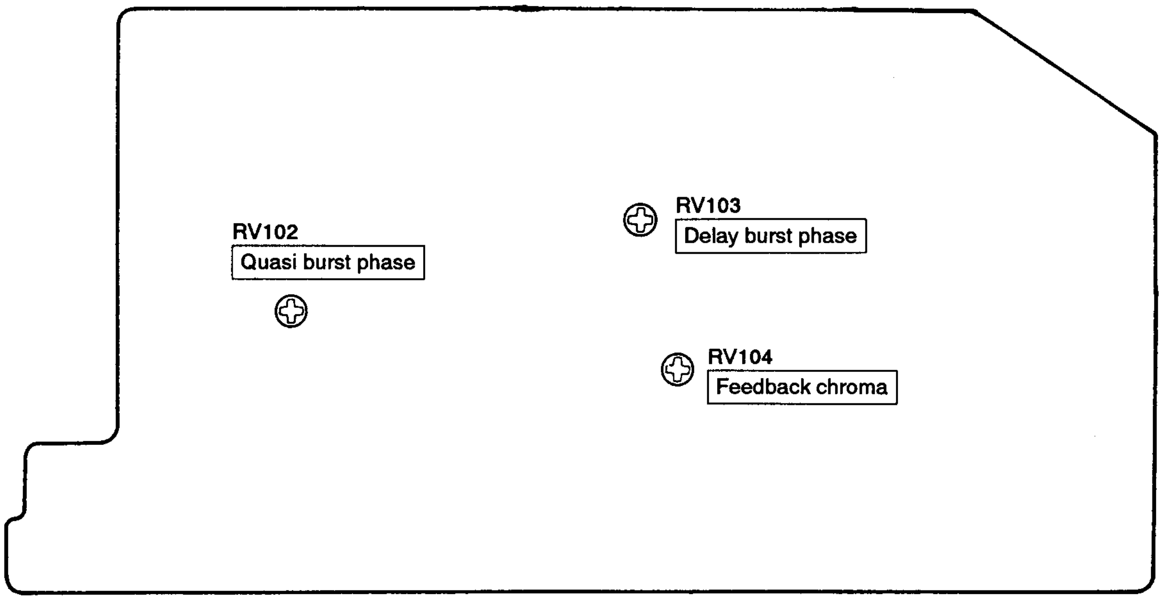
CV-9 BOARD (COMPONENT SIDE)


CV502
Generator fo
CV501
DDS characters position
15
1
IC202
16
30
RV201
SYNC AGC
CT801
Frequency
RV203
IR 2
RV202
Y/C separation
RV401
Emphasis input level
Y FM carrier frequency
RV403
PB video out level
RV207
RV402
RV205
REC Y level
PB Y level
RV208
REC C level
RV204
RV552
Y FM deviation
STILL

CV-9 BOARD (CONDUCTOR SIDE)


20
11
IC501
1
10
51
33
52
32
IC203
64
20
1
19
E B
Q230
C

PJ-20 BOARD (COMPONENT SIDE)


RV102
Quasi burst phase
RV103
Delay burst phase
RV104
Feedback chroma

CCD-F370E

SERVICE MANUAL

AEP Model
UK Model

Handycam
Video 8
U MECHANISM

CCD-F370E is a gray type model of CCD-F380E.
In this service manual, only the differences between CCD-F370E and CCD-F380E are mentioned.
When servicing, see the CCD-F380E service manual (9-972-878-11) with this manual.

SPECIFICATIONS

System

Video recording system	Rotary two heads, Helical scanning FM system
Audio recording system	Rotary head, FM system
Video signal	PAL colour, CCIR standards
Usable cassette	8 mm video format cassette
Tape speed	SP: Approx. 20.051 mm/sec. LP: Approx. 10.058 mm/sec.
Recording/playback time	SP mode: 1 hour 30 min (P5 – 90) LP mode: 3 hours (P5 – 90)
Fast forward/rewind time	Approx. 6.5 min. (P5 – 90)
Image device	CCD (Charge Coupled Device)
Viewfinder	Electronic viewfinder (black and white)
Lens	Combined 8 × power zoom lens f=8.5 – 68 mm, F1.6 with macro Filter diameter: 46 mm
Auto focus system	TTL
Colour temperature	AUTO HOLD INDOOR 3,200 K OUTDOOR 5,800 K
Minimum illumination	4 lux
Illumination range	4 lux–100,000 lux (0.4 – 9,294 footcandles)
Recommended illumination	More than 300 lux (28 footcandles)
Aperture correction	Automatic Back light adjustment

– Continued on next page –

MICROFILM

8 VIDEO CAMERA RECORDER

SONY®

Input and output connector

Video output	Phono jack, 1 Vp-p, 75 ohms unbalanced, sync negative
Audio output	Phono jack, –7.5 dBs, at output impedance less than 2.2 kilohms
RFU DC OUT	Special minijack, 5 V DC
Earphone jack	Minijack, 8-ohm impedance
Remote jack	Stereo mini-minijack
MIC jack	Minijack, –66 dBs, low impedance With 2.5 – 3 V DC output, impedance 6.8 kilohms
Microphone power output jack	Special minijack, 5 V DC

General

Power requirements	On battery mounting surface 6.0 V (battery pack)/7.5 V (AC power adaptor)/9.0 V (alkaline batteries)
Power consumption	6.9 W (camera recording) including the viewfinder
Installation	Vertically, horizontally
Operating temperature	0°C to 40°C
Storage temperature	–20°C to +60°C
Dimensions	Approx. 122 × 153 × 317 mm (w/h/d) including lens hood
Weight	Approx. 1.2 kg excluding the battery and cassette
Microphone	Electret condenser microphone, omni-directional monaural type

Supplied accessories

- Battery pack NP-66 (1)
- AC power adaptor AC-V35 (1)
- RFU adaptor RFU-90E (1) or RFU-89EA (1) With the RFU-89EA, an aerial selector and a screwdriver are supplied.
  - RFU-90E .... AEP model
  - RFU-89EA .... UK model
- Shoulder strap (1)
- Lithium battery CR2025 (1)
- Lens cap (1)

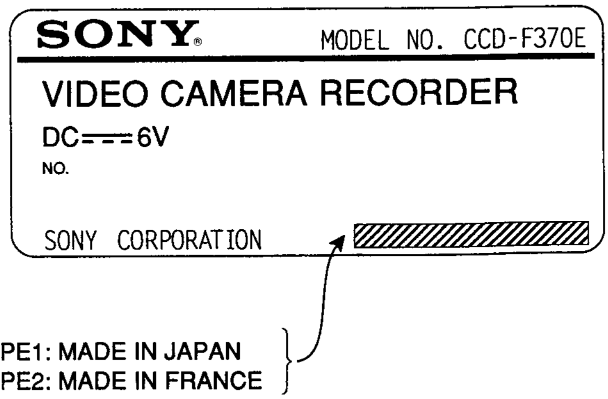
Design and specifications are subject to change without notice.

CAUTION

1. In this unit, A or B type EVF is uesd.

Type A	Color of connecting harness (VF-21) which connectes EVF and CV-9 board is gray. (VF-14p board)
Type B	Color of connecting harness (VF-21) is white. (VF-22p board)

2. There are differences between the electrical and mechanical parts of the TYPE 1 and TYPE 2 of AEP model. Refer to the following Model number label for identifying.

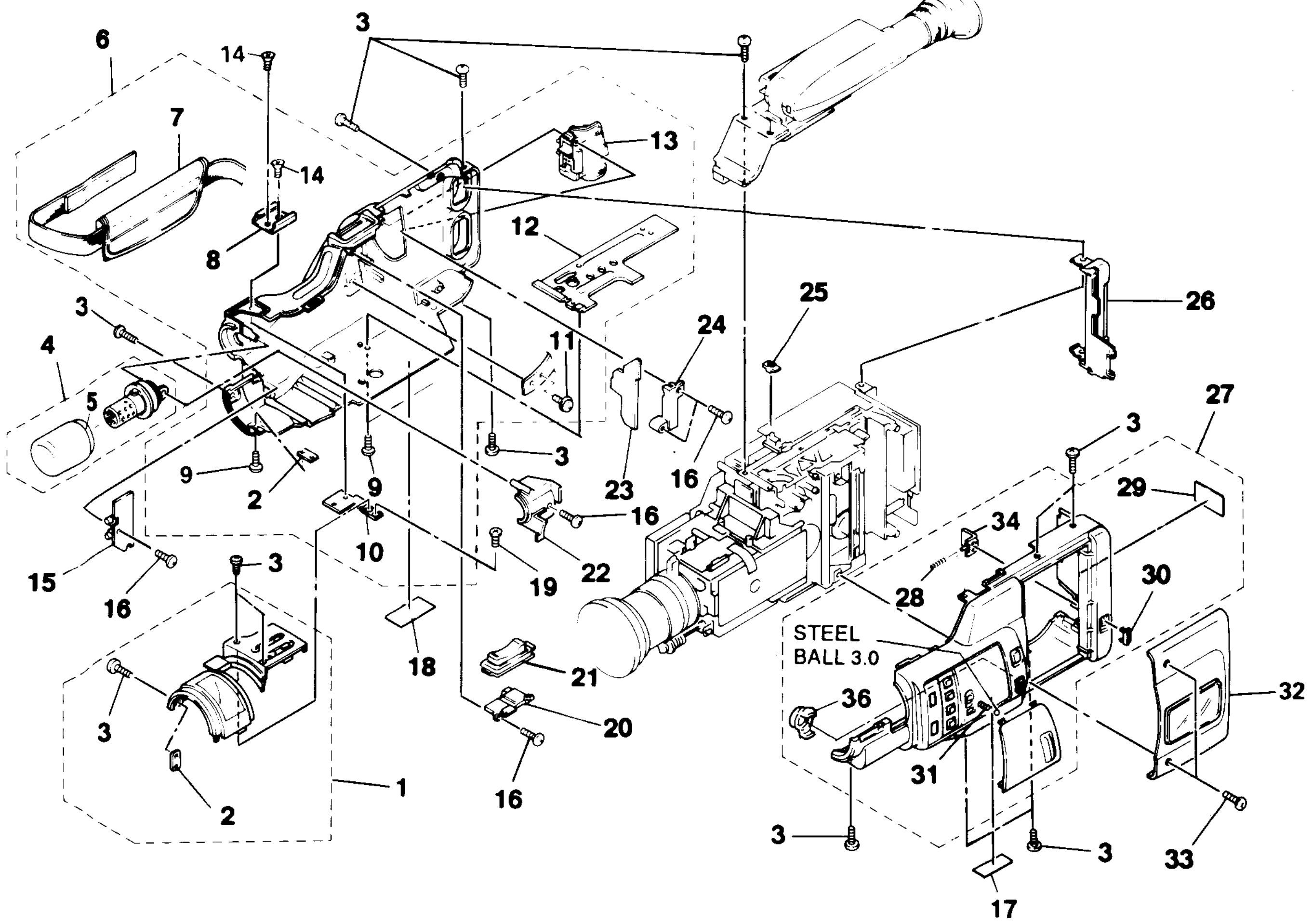


SECTION 1
EXPLODED VIEWS

NOTE:
- -XX, -X mean standardized parts, so they may have some differences from the original one.
- The construction parts of an assembled part are indicated with a collation number in the remark column.
- Items marked "*" are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.
- The mechanical parts with no reference number in the exploded views are not supplied.

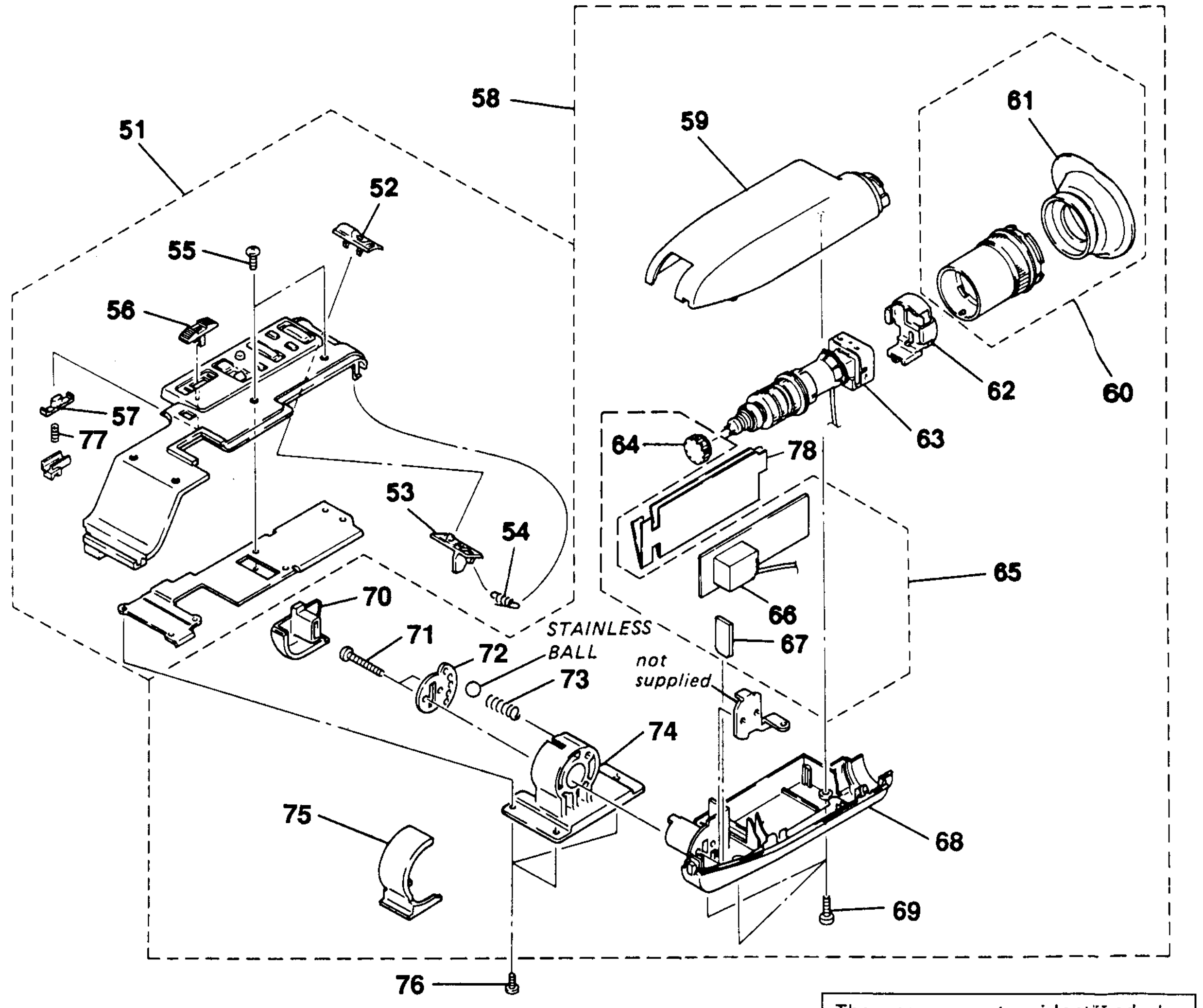
The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety.
Replace only with part number specified.

1-1. CABINET (R, L) ASSEMBLY



No.	Part No.	Description	Remark
1	X-3733-946-1	CABINET (FRONT) ASSY	2-3
2	3-732-912-01	JOINT, L/R	
3	3-719-381-01	SCREW (M2X4)	
4	1-542-125-21	MICROPHONE (C-2027)	5
5	3-707-650-11	SCREEN, WIND	
6	X-3737-751-1	CABINET (LEFT) ASSY	2, 7-14
7	3-719-323-01	BELT, GRIP	
8	3-724-511-01	SHOE, ACCESSORY	
9	3-719-381-31	SCREW (M2X3)	
10	3-737-723-01	RETAINER, SHOE	
11	3-669-480-21	+ PTPWH 2	
12	*3-732-911-01	SHEET METAL, TRIPOD	
13	X-3733-948-1	KNOB ASSY, SP	
14	3-719-831-21	SCREW (M2X4)	
15	*A-7061-958-A	MA-37P BOARD, COMPLETE	
16	3-713-790-31	SCREW (M2X8), TAPPING, P3	
17	*3-704-235-01	LABEL, CAUTION (UK MODEL)	
18	*3-746-832-01	LABEL, MODEL NUMBER (AE) (AEP(TYPE 1))	
	*3-741-585-01	LABEL, MODEL NUMBER (AE) (AEP(TYPE 2))	
	*3-746-833-01	LABEL, MODEL NUMBER (UK) (UK)	
19	3-713-790-01	SCREW (M2X6), TAPPING, P3	
20	*3-732-937-01	RETAINER, ZOOM BUTTON	
21	1-571-837-11	SWITCH, PUSH (ZOOM SW) (S901)	
22	3-737-737-11	HOUSING, MICROPHONE	
23	*1-631-831-21	RC-29P BOARD	
24	*3-732-928-01	STOPPER, RC	
25	3-732-926-01	BUTTON, EDIT	
26	3-732-924-31	BLIND, L/R	
27	X-3737-770-1	CABINET (RIGHT) ASSY	28-31
28	3-426-508-00	SPRING, COMPRESSION	
29	*3-719-683-01	LABEL, BATTERY FITTING	
30	3-732-905-01	BUTTON, BATTERY RELEASE	
31	3-576-098-00	SPRING, COMPRESSION	
32	X-3737-736-1	LID ASSY, CASSETTE	
33	3-733-912-01	SCREW (M2X2.5), SPECIAL HEAD	

1-2. CABINET (UPPER), EVF ASSEMBLY (TYPE A)

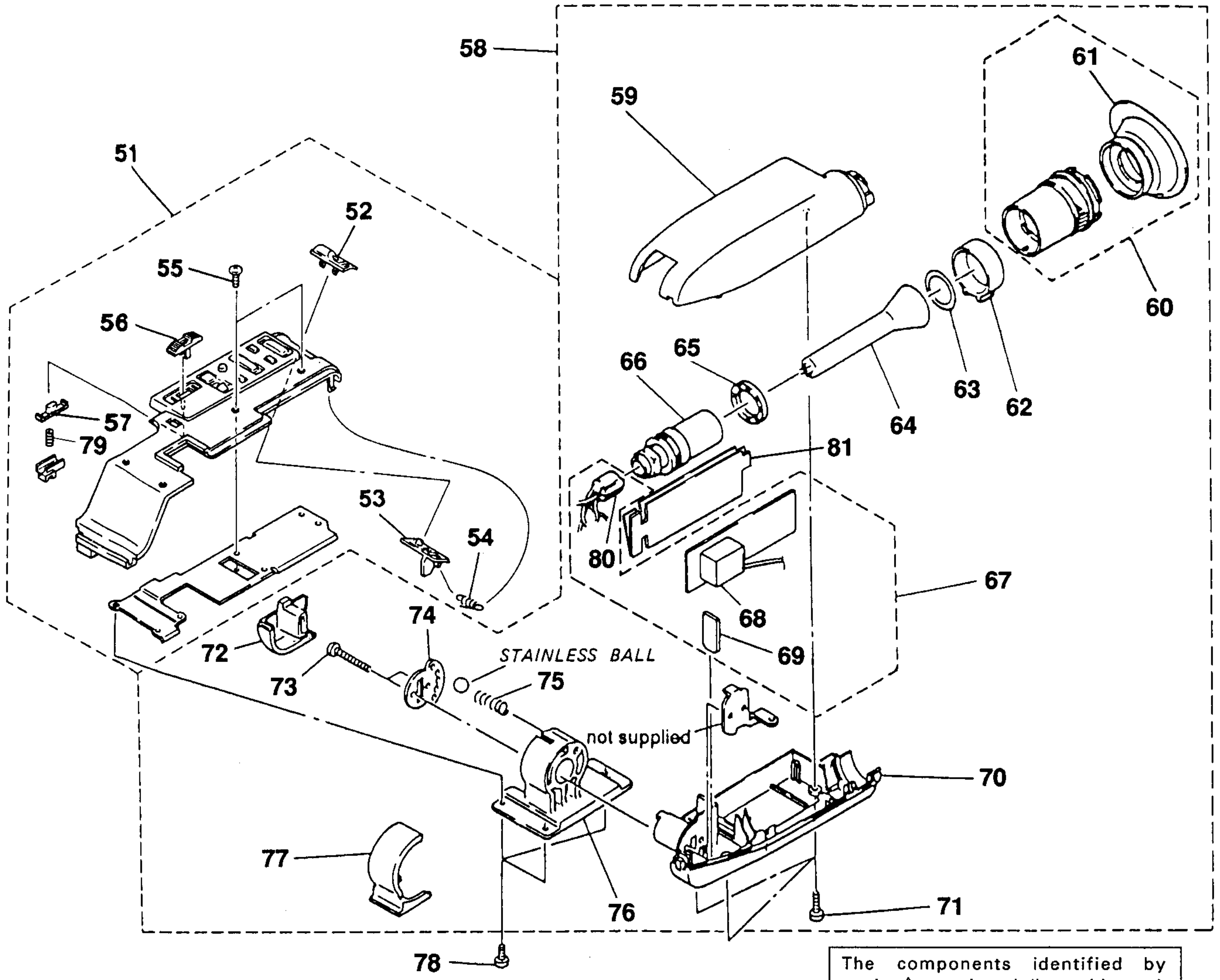


The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety.
Replace only with part number specified.

****(A TYPE)****

No.	Part No.	Description	Remark
51	X-3737-752-1	CABINET (UPPER) ASSY	52-57, 77
52	3-732-919-01	BUTTON, EJECT	
53	3-732-920-01	LOCK, EJECT	
54	3-669-440-00	SPRING, TENSION	
55	3-719-381-01	SCREW (M2X4)	
56	3-718-226-01	BUTTON, POWER	
57	*3-718-257-11	BUTTON, PUSH, POWER	
58	*A-7019-220-A	EVF COMPLETE ASSY (TYPE A)	59-76
59	3-732-948-51	CABINET (UPPER), EVF	
60	A-7081-148-A	HOLDER BLOCK ASSY, FINDER	61
61	3-733-922-01	EYE CUP	
62	X-3732-910-1	HOLDER ASSY, CRT (TYPE A)	
63	.1-452-482-11	CRT ASSY (M01JYZ60WB) (TYPE A)	
64	1-540-019-21	SOCKET ASSY, CRT (W901) (TYPE A)	
65	*A-7061-609-A	VF-14P BOARD, COMPLETE (TYPE A)	64, 66, 67
66	.1-439-431-11	TRANSFORMER ASSY, FLYBACK (T901)(TYPE A)	
67	*1-629-384-21	LD-13P BOARD (TYPE A)	
68	X-3737-722-1	CABINET (LOWER) ASSY, EVF	
69	3-713-790-31	SCREW (M2X8), TAPPING, P3	
70	3-732-949-31	BLIND, EVF CABINET (LOWER)	
71	3-732-987-01	SCREW (M2X20), +P	
72	3-732-947-01	PLATE, LOCK	
73	3-732-946-01	SPRING, COMPRESSION	
74	*3-732-944-11	BEARING, EVF	
75	3-732-950-31	BLIND, EVF	
76	3-732-988-01	SCREW (M2X2.5)	
77	3-303-973-00	SPRING, COMPRESSION	
78	*3-733-914-01	INSULATOR, EVF	

1-3. CABINET (UPPER), EVF ASSEMBLY (TYPE B)



The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety.
Replace only with part number specified.

****(B TYPE)****

No.	Part No.	Description	Remark
51	X-3737-752-1	CABINET (UPPER) ASSY	52-57, 79
52	3-732-919-01	BUTTON, EJECT	
53	3-732-920-01	LOCK, EJECT	
54	3-669-440-00	SPRING, TENSION	
55	3-719-381-01	SCREW (M2X4)	
56	3-718-226-01	BUTTON, POWER	
57	*3-718-257-11	BUTTON, PUSH, POWER	
58	A-7019-221-A	EVF COMPLETE ASSY (TYPE B)	59-77, 80, 81
59	3-732-948-51	CABINET (UPPER), EVF	
60	A-7081-148-A	HOLDER BLOCK ASSY, FINDER	61
61	3-733-922-01	EYE CUP	
62	X-3724-509-1	HOLDER ASSY, CRT (TYPE B)	
63	3-724-570-01	RING, CRT FIXED (TYPE B)	
64	.1-546-085-11	CATHODE-RAY TUBE, B/W (M01KGG007WB) (TYPE B)	
65	3-724-549-01	LOCK, CRT (TYPE B)	
66	.1-451-310-21	DEFLECTION YOKE (B/W) (TYPE B)	
67	*A-7062-012-A	VF-22P BOARD, COMPLETE (TYPE B)	68, 69, 80
68	.1-439-428-11	TRANSFORMER ASSY, FLYBACK (T901)(TYPE B)	
69	*1-630-067-21	LD-17P BOARD (TYPE B)	
70	X-3737-722-1	CABINET (LOWER) ASSY, EVF	
71	3-713-790-31	SCREW (M2X8), TAPPING, P3	
72	3-732-949-31	BLIND, EVF CABINET (LOWER)	
73	3-732-987-01	SCREW (M2X20), +P	
74	3-732-947-01	PLATE, LOCK	
75	3-732-946-01	SPRING, COMPRESSION	
76	*3-732-944-11	BEARING, EVF	
77	3-732-950-31	BLIND, EVF	
78	3-732-988-01	SCREW (M2X2.5)	
79	3-303-973-00	SPRING, COMPRESSION	
80	⚠.1-526-978-21	SOCKET ASSY, CRT (CRT-901)	
81	3-733-914-01	INSULATOR, EVF	

ACCESSORIES AND PACKING MATERIALS
****

Part No.	Description	Remark
*3-340-514-01	BAG, PROTECTION	
*3-732-952-01	CUSHION (UPPER)	
*3-732-953-01	CUSHION (LOWER)	
3-752-081-11	MANUAL, INSTRUCTION (English)	
3-752-081-41	MANUAL, INSTRUCTION (AEP MODEL) (French, German, Spanish)	
3-752-081-51	MANUAL, INSTRUCTION (AEP MODEL) (Dutch, Swedish, Italian)	
3-751-798-61	MANUAL, INSTRUCTION (AEP) (Portuguese)	
*3-764-631-12	INSTRUCTION, DEW CONDENSATION (AEP)	

**** ACCESSORIES AND PACKING MATERIALS (KIT) ****

Part No.	Description
A-6767-707-A	RFU ADAPTOR (RFU-89EA) (UK)
A-6768-254-A	RFU ADAPTOR (RFU-90E) (AEP)
1-571-164-11	SWITCH, ANTENNA CHANGE (CABLE) (UK)
3-712-673-01	SCREWDRIVER (UK)
*3-741-532-01	CUSHION, ACC
3-741-582-01	BELT, SHOULDER
*3-733-975-31	INDIVIDUAL CARTON (AEP(TYPE 2))
*3-746-806-21	INDIVIDUAL CARTON (AEP(TYPE 1), UK)
** AC-V35	AC POWER ADAPTOR
*** NP-66	RECHARGEBLE BATTERY

Note

** MARK PARTS IS AVAILABLE FOR REPAIR SERVICE.
*** MARK PARTS IS AVAILABLE AS AN OPTIONAL ACCESSORY.

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HARDWARE LIST
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SCREW

Part No.	Description
7-621-281-15	SCREW +P 2X2
7-627-553-37	PRECISION SCREW +P 2X3 TYPE 3
7-627-553-48	PRECISION SCREW +P 2X4 TYPE 3

STEEL BALL

Part No.	Description
7-671-155-01	STEEL BALL 3.0
7-671-156-01	BALL, STAINLESS

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9-972-987-11

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